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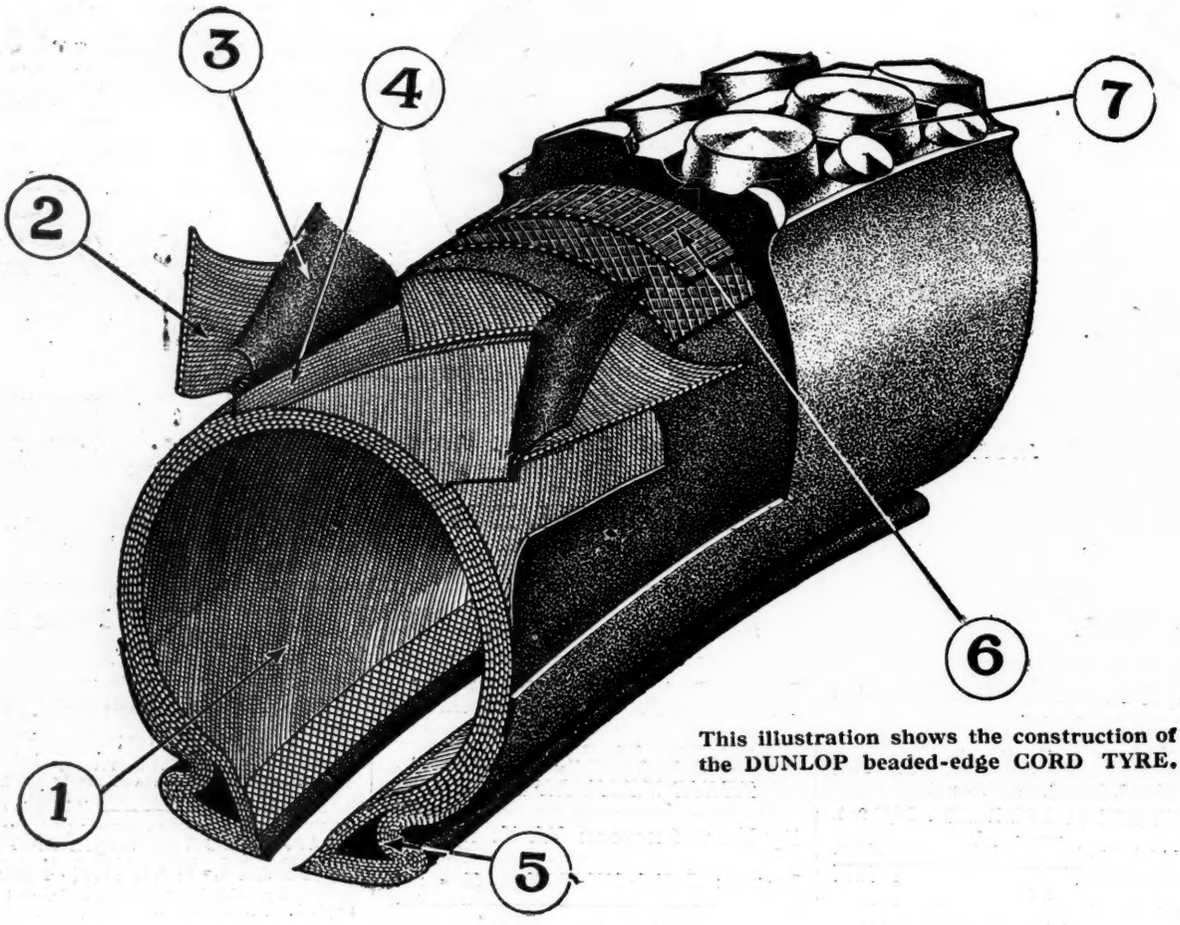

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A British Medical Association Lecture

ON

THE PROBLEM OF THE RADIUM THERAPY OF CANCER.*

BY

ARTHUR BURROWS, M.D.LOND.,

RADIOLOGIST, MANCHESTER AND DISTRICT RADIUM INSTITUTE.

[IN the earlier portion of the lecture Dr. Burrows dealt with the physical properties of radium; he then went on as follows:]

A few facts have been established in respect to the action of radium on cancer cells during the last twenty years. The first is that cancer cells can be destroyed by rays, but this statement is modified by the knowledge that, given a sufficient dose, practically all tissue cells can be killed by radiation, and so arises the second point—namely, that there is a minimum dose which will just kill a cancer cell and will not, as a rule, kill an ordinary tissue cell. This is called the "minimum lethal dose," the "lethal dose," or the "cancer dose." This lethal dose varies with different tumours and different conditions.

Theoretically, given a known quantity of rays, the lethal dose of the cells of a certain cancer, and the size and situation of the tumour to be treated, it is possible to destroy almost any cancer, but unfortunately all these three conditions are variable and are made up of variables. Thus, with regard to rays, the beta rays from radium are not uniform, but are made up of groups of rays which are of different penetrability. Similarly the gamma rays are mixed, as also are *x* rays. Beta rays can be screened off entirely by using metal plates of a definite thickness, or they may be partially cut off by using thinner or less dense material. It is very difficult to cut off all gamma rays, but certain of them can be eliminated by a process of screening and an attempt made to obtain rays of a certain minimum penetrating power. In the same way by screening and by improving and standardizing apparatus an attempt is made to keep *x* rays as constant as possible, but unfortunately it is not known exactly what is the right type of ray for each tumour. A few facts are known—for example, that a rodent ulcer will do well with unscreened radium (that is, mostly beta-ray treatment), but gamma-ray treatment is also effective. I think, however, that if beta rays fail in the treatment of a rodent ulcer gamma rays will rarely be successful. Skin diseases are obviously most suited for rays of a longer wave-length. Most rays seem to affect lymphosarcomata, while carcinoma of the tongue as a rule yields best locally to beta rays, but of course with beta rays there is a strong caustic or destructive action. One of the claims of the Erlangen *x* ray treatment is that a correct ray for the destruction of carcinoma of the cervix of the uterus has been established. But the size, density, and depth of a tumour obviously affect not only the quantity of rays penetrating the whole of a growth—for that can be rectified—but also the quality, which cannot be thus adjusted when radiation is being applied from a distance. The actual insertion of a varying number of suitably screened radium tubes into a tumour is the only method of ensuring uniformity in the quality of the radiation applied. Some tumours are not suitable for the burying of tubes in their substance, and it is then seen how complicated the whole subject is, and how the question of the quality of the rays used, and the dosage, merge into a consideration of the size, density, nature, and position of a tumour.

Lethal Dose.

Assuming that beta rays are used to kill a cancer cell, it is probable that the lethal dose for these would be different from the lethal dose for gamma rays; or, pushing the matter farther, the lethal dose of soft *x* rays would be different from the lethal dose of hard *x* rays, as the destructive action of radiations must depend on the quantities of them which are actually stopped in the cells of a growth. Therefore, in fixing a lethal dose for a certain tumour, it must be established for a definite type of ray, and this does not in practical therapy depend altogether upon the operator, but upon the size, nature, and position of the growth he has to radiate. Thus, change the position of the growth by one centimetre and it may be necessary to alter the type of ray used, and with that the dosage if raying is being carried on from a distance. Then, again, the lethal dose for a tumour may be very near that of the ordinary tissues, and a very fine or no margin left between the quantity and type of rays destroying the normal tissue and the cells of the tumour.

As an example of this last possibility the secondary nodule which may be present on the chest wall following an amputation of the breast may be given. Over this may be stretched a thin and delicate covering of epithelium, and any application of rays given to the nodule may destroy the skin beyond repair long before the tumour cells in the nodule itself are killed.

Nature of the Tumour.

It is an established fact that some tumours are destroyed by rays more easily than others—for example, a small round-celled sarcoma is more easily caused to disappear by irradiation than a squamous-celled carcinoma; but absolute uniformity in respect to the behaviour of groups of growths under radiation does not exist, as other factors, such as the patient's general resistance to tumour growth, or the situation of the tumour, alter its susceptibility to rays and possibly also the stage of development and age of the tumour itself. Is, for instance, a rodent ulcer growing in the skin a different growth from one growing in bone? The same treatment will not cure them both. In fact rodent ulcers of the skin are easily cured by radium; rodent ulcers invading bone are only exceptionally cured.

Nor must the fact be forgotten that rays seem most markedly to affect the reproductive functions of cells. Therefore let the tumour grow quickly, and most often the local growth will rapidly diminish, and vice versa; but unfortunately the local tumour is not the only consideration, for growths such as encephaloid carcinoma of the breast, which grow very rapidly and respond well to radium, soon form secondary deposits, so that the ultimate result is not so good. Or again round-celled sarcomata are usually quoted as types of tumours which respond well to radium treatment, but the more slowly growing and difficult to treat spindle-celled sarcomata with perseverance give the best results in the end.

Size and Density of Tumours.

The size of a tumour is important from several points of view. If a tumour is exceedingly large commonly there is a poor blood supply at the centre (if it is a carcinoma), and there is a great tendency for the tumour to break down and slough under treatment, while at the same time a poor blood supply does not give adequate chance of repair following the treatment. Again, the size of the tumour has a marked effect upon the size of the dose of radiation which is given if an attempt is to be made to destroy all the cells it contains. A small tumour can fairly easily have an even radiation applied throughout its substance, but if it is very large, provided the rays are applied from one direction, the quantity falling on the near side of the tumour will be very much greater than that emerging from the far side. It is also apparent that the density of the growth will have a similar effect, for the denser the tumour the greater will be the difference between the entering and emerging rays.

In the early days of radium treatment Wickham and Degrais suggested the method of cross-fire as one of the means of getting over this difficulty—for instance, if a tumour can be treated from two sides, all other factors being equal, double the dose can be given to the tumour by applying radium to it on those two sides. If the tumour is accessible it may be radiated from more than two sides. What is done by the Erlangen method of *x*-ray treatment is very much the same thing. In order to get a sufficient quantity of *x* rays to the tumour, rays are directed through several different areas of skin towards the tumour, which areas are called "ports of entry." It is thus seen that the method is the same as the cross-fire system used by Wickham and Degrais.

With radium and radium-emanation treatment the difficulty is also partly met, as has already been mentioned, by burying radium or radium emanation in the growth, or by varying the distance of the applied radium from the external skin. In the foregoing reference to the size and density of a tumour it has been more or less assumed that the tumour has been regular in outline and of uniform density throughout. But in practice, of course, malignant growths are of many and varied shapes, and they have near and distant secondary deposits; also they are by no means of uniform density, so that the problem of dosage becomes very complicated, and the most that can be hoped for is to obtain an approximation to what is desired which will work in practice.

[3210]

*Delivered before the Southport Division of the British Medical Association.

The Position of a Tumour.

Its position has a very similar influence to the size and density of a tumour upon its susceptibility to radiations. If, for instance, it lies beneath or in tissues such as muscle and bone, it may become almost impossible to give it adequate radiations from the surface. If such factors as these are not present it may be possible that radiations from one side where the tumour is nearer may, at least in part, make up for deficiencies in radiation from the other side from which the tumour is farther away; but to get a proper quantity of rays traversing the growth many ports of entry may have to be used, and it becomes very difficult to get absolute accuracy of dosage. When cancers invade or are adherent to certain structures and organs such as bone, the stomach, bowel, liver, or lungs, treatment is rendered much more difficult, and often at the present time fails to produce a good result. It seems that not only is the nature of the tumour an important factor in ray treatment, but also the nature of the tissue and organs that it invades. The more accessible a growth is, as a rule, the better are the results, but growths of certain organs, such as the œsophagus, rectum, and tongue, seem to resist radium treatment more than elsewhere.

The consideration of the preservation of the skin is an ever-present problem to the radiologist. It has been already mentioned that under certain conditions it is possible that a stretched or ill-nourished skin may be more rapidly destroyed than a tumour, and, moreover, if the blood supply or ability of the skin to repair is bad, unless proper care is used the last condition may be worse than the first, from the formation of an intractable ulcer—not an *x*-ray or radium ulcer but a malignant one. That is to say, it may not be possible to give a suitable destructive dose to the ill-nourished tissues without risk. If one could be sure of destroying such a malignant growth beneath the skin there would be less difficulty in dealing with the factor of the skin, for it is almost certain that scar tissue would eventually form and fill up the gap; but the uncertainty of destroying the growth under these conditions makes the radiologist take more care in endeavouring to preserve the skin, and hence has arisen the so-called "erythema dose." The burying of radium tubes will often, but not always, obviate this difficulty. In the case of rodent ulcers and epitheliomata of the skin not invading bone or cartilage, the skin, as a rule, has been modified or destroyed by the growth. In such cases the preservation of the epithelium need not be considered and marked local destruction produced if necessary, with knowledge that good repair will take place afterwards and a soft, supple scar be formed.

It will be seen from the foregoing remarks that the whole system of ray treatment is exceedingly complicated. The difficulties of dosage are modified by nearly all the usual things which may take place in a tumour from its nature or position. The possibility of actually stimulating an outlying portion of a growth which has been only partially radiated must always be borne in mind, although it is not as a rule a difficult problem in practice, because fortunately the range of dosage producing stimulation is an exceedingly small one.

What is needed is a large number of physical measurements of the different parts of the human body and of pathological growths, and a full and complete investigation of the nature of the lethal dose for cancer cells; when these have been made an approximate idea may be obtained of the method of treating tumours in different situations, although even then it seems that a number of imponderable biological problems, such as the resistance of the organism as a whole and the resistance of tissues locally to cancer growth, remain to be solved.

But in spite of all these difficulties, and the disadvantageous position in which radiologists are placed in this country of treating practically only inoperable cases, many good results are obtained from radium treatment: 7½ per cent. of all the cancer cases (mostly inoperable) which come to Manchester for radium treatment are alive and well to-day after periods varying from two to seven years, and many cases of carcinoma of the cervix of the uterus, breast, skin, lip, and other regions are in perfect health who would but for radium be dead; while endothelioma of the parotid gland and spindle-celled sarcomata show still more gratifying results. Moreover, short of cure much valuable palliative work is done, while in non-malignant conditions, such as exophthalmic goitre, Hodgkin's disease (when young), keloid, cavernous and capillary naevi, the percentage of cures is high; finally, radium is specific for excessive uterine haemorrhage and spring catarrh.

THE SURGICAL TREATMENT OF CHRONIC ULCER OF THE BODY OF THE STOMACH.

BY

WILLIAM BILLINGTON, M.B., M.S.LOND., F.R.C.S.,

SENIOR SURGEON, QUEEN'S HOSPITAL, BIRMINGHAM.

THE surgical treatment of duodenal ulcer and pyloric ulcer can now be regarded as standardized and relied upon to give almost uniformly and permanently satisfactory results. Such a statement cannot yet be made in respect of ulcers situated in the body of the stomach. Their treatment has been difficult and disappointing, and the many and varied operative procedures advocated and practised have been gradually discarded as failing to give the results hoped for. Partial gastrectomy, involving excision of the segment in which the ulcer is situated, together with the portion of the stomach on the distal side of it, is strongly recommended by such eminent authorities as Sir Berkeley Moynihan and Mr. James Sherren as being the only method that can be relied upon to cure. On general grounds such a drastic remedy is only justifiable if we admit inability to succeed by simpler measures. The routine excision of an organ for a non-malignant lesion is at variance with the principles governing conservative surgical practice and is rather a confession of failure. That gastrectomy is advisable in certain cases of gastric ulcer may be admitted, but unless we are prepared to regard such ulcers as precursory of cancer its necessity in every case can only be accepted with great reserve. Further, even though partial gastrectomy is held to be the procedure of election the problem is not solved, for it is inapplicable in many of the worst cases of gastric ulcer and proves useless when most required.

For many years I was impressed by the uncertainty of the results that followed operations for gastric ulcer. Immediate and permanent relief of symptoms was obtained in some cases, while in others the results were only partially good or wholly unsatisfactory. Good or indifferent results bore no definite relationship to the size and character of the ulcer, nor to the particular operation performed. I tried posterior gastro-enterostomy with and without excision of the ulcer, excision of the ulcer without gastro-enterostomy, excision of the segment of the stomach in which the ulcer was situated by the "sleeve" method, and various other procedures that have been advocated from time to time. None of these methods gave uniformly good results, and it is of interest that my worst results occurred in a series of twenty-five cases in which small ulcers were excised freely and the opening carefully closed without the production of any appreciable deformity of the stomach. A very small proportion of these cases derived any benefit from the operation, and I have subsequently had to operate a second time upon nearly half of them.

Careful consideration of my cases gradually brought out the fact that the chief determining factor as regards result was the situation of the ulcer. My experience, which I believe to be in accord with that of surgeons generally, was that the relief of symptoms due to gastric ulcer becomes increasingly difficult the farther from the pylorus the ulcer is situated. The farther the ulcer from the pylorus the less satisfactory were the results obtained by the same operative procedure. There is no evidence that this is due to any essential difference in the morbid anatomy or the pathology of the ulcer. An ulcer in any part of the stomach is more or less subjected to the same physical conditions as regards chemical and mechanical irritation of gastric contents. If, then, there is a difference in the response of such ulcers to surgical treatment it can only be accounted for by variations of site and not of pathology, and treatment must be varied in accordance with that principle.

Following up the clue provided by clinical and operative experience, with the valuable assistance of Dr. Harold Black, radiographer to the Queen's Hospital, Birmingham, an endeavour was made to ascertain in what way an ulcer modifies the physiology of the stomach. That from a surgical standpoint any essential modification was in respect of its motility and not its chemistry I was convinced, and that the chemical part of gastric digestion could be modified by a surgical operation to the advantage of the patient appeared highly improbable on general grounds, and my operative experience confirmed this opinion.

Radiography brought out clearly the fact that an ulcer of the stomach causes spasm of the segment in which it is

situated. This spasmodic contraction may last for a long time and be associated with considerable delay in the passage of the meal past the site of the ulcer. It was also observed that spasm of the segment in which the ulcer was situated was accompanied by feebleness or absence of peristalsis in the rest of the stomach. The *x*-ray observations went to prove that the effect of an ulcer, whether at the pylorus or in the body of the stomach, was the same. In both cases there is spasm of the ulcer segment and damping down of general peristalsis.

The immediate and lasting relief that follows posterior gastro-enterostomy for pyloric ulcer, and its failure in many instances to give the same result when the ulcer is situated in the body of the stomach, seems to depend upon the relationship between the site of the ulcer and that of the new stoma. In cases of pyloric ulcer the artificial stoma is always situated well to the proximal side of the ulcer, while in proportion as the distance of the ulcer from the pylorus increases the less likely is this to be the case if the ordinary rule is observed that the new opening should be made at the most dependent part of the stomach where the cardiac and pyloric portions join. When the ulcer is situated far over to the left it may well be that the new stoma lies wholly distal to it. This failure to modify the site of the stoma as the situation of the ulcer varies is, I am convinced, largely responsible for the varying results of gastro-enterostomy for ulcers of the body of the stomach. For relief of spasm it is essential that the new stoma should be placed well on the proximal side of the ulcer, and ulcer and stoma should bear a definite relationship to one another. Radiography demonstrates that when this is the case practically all the meal passes rapidly and smoothly through the new opening, little or none passing into the portion of stomach on the far side of the ulcer segment.

Clinical experience proves, however, that drainage of the stomach on the cardiac side of the ulcer only is not altogether satisfactory. The distal pouch is a factor that has to be reckoned with. It appears to become a "dead" cavity and a kind of cesspool in which stagnant stomach contents which have passed beyond the ulcer segment in small quantity collect. Peristalsis is feeble and ineffective to empty this pouch either by forcing back its contents into the proximal pouch or on through the pylorus. The result is that the patient experiences a sense of discomfort and epigastric fullness. To remedy this it is necessary to establish a second anastomosis between the distal pouch and the jejunum, or to extirpate the pouch altogether. That the latter is effective is certain, but that it is essential is open to criticism.

Briefly stated, in my opinion chronic ulcer of the body of the stomach should be treated as though an hour-glass contraction existed at the site of the ulcer. The alternative operations are: (1) Partial gastrectomy, the distal pouch, together with the ulcer, being removed and the proximal pouch anastomosed to the jejunum; or (2) double gastro-enterostomy, openings being established between the stomach and jejunum on either side of the ulcer. The choice between these two procedures is to a large extent determined by the conditions found at the time of operation and by clinical evidence upon the question of malignancy.

For several years I have treated every case of chronic ulcer of the stomach on the above lines and have made no distinction between those cases in which definite hour-glass contraction existed and those in which it did not. At first I adopted partial gastrectomy as the procedure of choice, but in many cases, and those often the worst, it was impracticable. Where an extensive ulcer was adherent to the pancreas over a wide area or had penetrated through all the coats of the stomach into structures outside, gastrectomy would have been extremely difficult and dangerous. The same objection applied to cases in which the ulcer was situated far over to the left in the cardiac end of the stomach where closure of the proximal pouch could only be effected with considerable difficulty. Further, the general condition of some of the patients was such that it was undesirable to do more than was absolutely essential.

For these reasons it was often necessary to adopt the second alternative—that of drainage of the stomach on either side of the segment containing the ulcer. This is done by means of a single long opening or by two entirely separate anastomoses. The site of the ulcer is the sole determining factor, and so long as the openings are placed well to either side of it the most easily accessible portion of the stomach wall is selected. Often it is impossible to utilize the posterior surface of the stomach for the anastomoses owing to dense adhesions, and the anterior wall is then selected. Owing to the necessity for placing the anastomoses in definite relationship to the site of the ulcer the usual technique for securing the smooth flow of bile and pancreatic secretion along the jejunum and the avoidance of regurgitant vomiting is rarely practicable. To obviate this risk entero-enterostomy is performed between the ascending and descending limbs of the coil of bowel taking part in the anastomoses. A loop of jejunum is taken, sufficiently long to allow of this lateral anastomosis being comfortably carried out. The whole operation involves a minimum of disturbance, causes a negligible amount of shock, and is easily completed in fifty minutes.

The results of the operation were surprisingly good, immediate relief being experienced. Indeed, so free from digestive disturbance were the patients that it was with the greatest difficulty that they could be persuaded to exercise the care with their diet that was obviously advisable for some months at least, in view of the fact that the unhealed ulcer still existed. That such care is necessary was shown by temporary relapse in several cases after gross indiscretions of diet. So good were the results that I began to extend the range of the operation, and to carry it out in preference to partial gastrectomy in cases in which the latter was practicable. I have now treated between fifty and sixty cases of ulcer of the body of the stomach in this way, and although many have been operated upon too recently to draw positive conclusions as to the permanency of the benefit obtained the general result has been very encouraging.

In discussing the choice between partial gastrectomy and double gastro-enterostomy with entero-enterostomy, the question of malignancy must be considered. If cancer often becomes engrafted upon chronic gastric ulcer obviously the more drastic operation is preferable as more likely to remove this grave risk. The experience of English surgeons has been that ulcers which have existed for a considerable time rarely become malignant: that some ulcers are malignant from the onset is certain. Clinically it may be difficult to make a distinction, and I am accustomed to rely upon the duration and persistency of the symptoms. A short history with persistent and progressively severe symptoms is highly suspicious, while a long history with intermittency of the early symptoms makes primary malignant ulcer unlikely. The former history calls for gastrectomy, if at all possible, whatever the character of the ulcer at the time of operation. There is no reason, if the risk of secondary malignancy is feared and local conditions allow of it, why the ulcer should not be excised, or destroyed by the actual cautery as Balfour suggests, provided that the stomach on either side of its site is drained. Such local treatment is impracticable in the worst cases, and in the simpler ones I believe it to be unnecessary, the ulcer tending to heal rapidly when efficiently short-circuited. It is remarkable how rarely at a second operation carried out some time afterwards there is any evidence of the original ulcer beyond some scarring of the stomach wall.

That double gastro-enterostomy with entero-enterostomy has a real value I am convinced. It can be relied upon to give prolonged relief in the worst forms of gastric ulceration where partial gastrectomy is contraindicated on account of the difficulty and danger involved. My experience of it has been too short to claim a permanent cure, but the maintenance of satisfactory digestion at the end of two years encourages the hope that it may prove to be so in many cases.

As to whether it should be regarded as an alternative to partial gastrectomy where the latter is practicable is more controversial. If equally good results are obtainable by the less severe operation, it must be the one chosen. Partial gastrectomy is, however, so strongly advocated by some very experienced surgeons that one is diffident about criticizing their statement that it should be the procedure of election. Before, however, accepting this view as applicable to all cases of simple ulcer of the body of the stomach in which partial gastrectomy is possible, further evidence of its necessity must be forthcoming. Although in very experienced hands partial gastrectomy is not dangerous, it is a formidable operation for the ordinary surgeon and only justifiable if a cure is unobtainable by simpler, safer measures. For this reason I suggest a more extended trial of double gastro-enterostomy combined with entero-enterostomy.

SOME NOTES ON DEEP THERAPY.

BY

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X-RAY RESEARCH SCHOLAR IN CANCER AND RADIOLOGICAL REGISTRAR, MANCHESTER ROYAL INFIRMARY.

IT had become evident before the war that if radiotherapy was to progress on a scientific basis some accurate method of calibrating the output from the Roentgen tube must be found. Kienböck of Vienna had introduced a method depending on the action of the rays on an emulsion containing a silver salt, but it gave variable results in the hands of different and even the same workers, and it became evident that if it was to become generally useful the reason for these variations must be ascertained. Professor Wintz at Erlangen found that just as these silver salts are more susceptible to certain rays in the visible spectrum, so there are certain rays of definite wave-length in the *x*-ray spectrum which exercised a selective action on the silver salts ($\lambda = 0.055 - 0.049$ A°*u*). This went a long way towards explaining the variations found, but did not overcome them. A step in advance was to measure the light given off by a screen containing platinum salts. Here the emulsion was protected from direct radiation by a heavy lead shield and only the light rays reached it. Though there were various objections to this apparatus, they were not so pronounced as in the case where the emulsion was acted upon directly by the *x* rays. Another method was brought forward by two Frenchmen—Villard and Szilard—who made use of the property that *x* rays have of ionizing air and so discharging an electroscope; they called their instrument the iontoquantimeter. The rate of discharge was given as directly proportional to the output of the tube. The original instrument was both cumbersome and inaccurate, especially in clinical use; it was considerably simplified and improved by Wintz and Baumeister of Erlangen, and has proved remarkably accurate; it has since practically displaced all other methods of measuring the output of different tubes.

This, though a great advance, was only a means to an end. Treatment had been directed more to the surface of the body, and deep effects had taken a long time to obtain. To obtain these effects more rapidly a ray was needed that would exert a minimum effect on the skin but a maximal effect in the depths of the body. It was necessary to eliminate all the softer rays which are arrested in the superficial layers of the body before they reached the skin. This was effected by increasing the amount of filtration; it was found that a zinc filter 1/2 mm. thick gave the best result, especially when the time factor was taken into consideration. (This thickness corresponds to 11 mm. aluminium.) The next step was so to increase the output of the tube that the result was obtained in the shortest time. Apparatus could fairly easily be designed to give the required current, but it was some time before a tube was obtained which would stand up to the terrific strain of this continuous high voltage current. The tube evolved was the "self-hardening boiling water cooled tube."

Experiments to ascertain the optimum conditions under which the tube should be worked to give the best dose in the depths of the tissues showed that at the tension used a current varying between 1 and 2.5 ma. was the most satisfactory. Up to this time the condition of the tube had been regulated by an osmo-regulator controlled by the operator, but this method was found unsatisfactory because it allowed great variations in the condition of the tube. The automatic regenerator or regulator was therefore introduced by Wintz; in it the indicator of a current meter, introduced into the secondary circuit, impingeing on a long lever, makes and breaks a current going to a solenoid, whose plunger acts as a valve in the tube supplying gas to heat the osmo-regulator.

The aim has been all along to decrease the time required for the treatment and to maintain the dose obtained in the depth of the tissues. A great advance has been made by using the Coolidge tube in conjunction with a special resistance, which has not only shortened the time necessary but actually increased the proportion obtained deep down.

On the Continent the difficulty of efficient insulation of coils has been solved, and transformers which give a varying output—up to 250,000 volts—for twelve hours daily without breaking down are in use. Both low and high output types of apparatus are available, but for malignant conditions a type with the comparatively low output of 2 to 2.5 ma. seems the most favoured, for it allows the concentration of a number of small ports of entry upon a growth, enabling the operator to obtain practically any desired dosage. Generally speaking, apparatus of a higher output requires the use of larger ports of entry, with a corresponding diminution in the total amount of radiation obtained in the depths of the tissues.

Methods of Application.

The methods of application may be considered under three headings:

1. Roentgen irradiation alone.
2. Roentgen combined with radium irradiation.
3. Roentgen irradiation combined with physical agents to increase the efficacy of the applied rays: (*a*) electrolysis with metallic salts; (*b*) packing patient in paraffin blocks.

Methods 1 and 2 are in general vogue, though so far as I could ascertain for deep-seated tumours, especially of the rectum and the genito-urinary tract, the operators preferred to use radium to supplement the action of the Roentgen rays. This method, owing I think to insufficient screening, has unfortunately often been attended by unpleasant indurated scarring which sometimes leads to serious disability, and for this reason alone the use of radium has been practically abandoned in Erlangen, where it has been replaced by method 3 (*a*).

Not being altogether satisfied with results they attempted to increase the scattering—and hence the absorption—of the rays in the immediate neighbourhood of the tumour. It seemed that this could be accomplished most easily by the introduction of minute metallic particles in and around the tumour; it was found that one of the less irritating copper salts introduced by means of ionization was most suitable. Nothing has so far been published on this work*; but at the Erlangen Frauenklinik it is claimed to be possible to bring about an even distribution of fine copper particles to a depth of 10 cm. The exact manner, however, in which it acts, whether by secondary radiation or by producing other effects, is still a matter of surmise; but the fact remains that, whatever the manner of working, the condition of the patient is very much improved, and at the present time the method is being employed wherever possible.

The most recent modification is that employed by Chaoul in Munich. Relying on the fact that actively proliferating cells are much more susceptible to radiations, he exhibits a dose to the whole body which is just sufficient to stimulate the cancerous cells to greatly increased activity. He follows this with a full dose some eight days later. He surrounds the patient with blocks of paraffin and delivers the main dose directly over the tumour. By means of the paraffin blocks much of the radiation passing outside the port of entry is caught and deflected back into the body, thus greatly increasing the amount of radiation received by the tumour. Chaoul states that as this method has been in use for only twelve months, it is too soon to draw conclusions, yet his results are very much better and he has had no untoward circumstances. The unit of dosage is in all cases measured by the production of an erythema within four to eight days; the interpretation of the term "erythema dose" varies with the different clinics, but in the end one comes to the conclusion that they agree on the whole about the amount of radiation required to treat the various tumours.

A point that strikes me rather forcibly is the insistence on the opinion that intensive therapy is not to be lightly undertaken, and then not without an extensive clinical examination, supplemented where necessary by the laboratory. Owing to the very real danger of "Roentgen cachexia" supervening, the patient's blood picture must conform to a very definite standard, and when below this, general tonic treatment is instituted in the endeavour to build up his health to this required standard.

The all-important question, however, is that of results. In the earlier results from 1914 onwards radiotherapy appears, on the whole, to be slightly more successful than operation, and there is no doubt that with the improvements in technique the indication is still more in favour of radiotherapy, even more so than of therapy combined with operative procedures. By results cure is not necessarily meant; that is almost impossible, I think, but we can speak of relief being more or less permanent. I do not think that the five years' standard is

* I am indebted to Dr. Langer—Professor Wintz's first assistant—for permission to make use of these notes, although nothing has been so far published on this work.

sufficient indication, because in many instances a relapse occurs between five and eight years.

In widely extended disease the tumour must be treated in two or more sections at intervals of six to eight weeks, and one of the most important effects I have noted is the great improvement in the condition of the patient which follows even the first application. This indeed is sometimes so marked as to be a disadvantage, in that the patients either return to work and so damage the skin overlying the port of entry, which is not so healthy as the surrounding integument, or else fancy themselves cured and fail to return at the appointed date, so that it is only months later, when the disease is often out of hand, that they come back expecting once more—often in vain—the relief they obtained from the first application. Again, not only is there almost entire absence of disability following irradiation, but in most cases where the relief is only temporary—as is also often the case after surgical procedures—the period of improvement is in nearly all instances longer than the surgeon could have given, and that without the considerable discomfort of an operation.

Classification of Results.

Results should be classified according to the method employed.

1. *Roentgen Therapy alone.*—As it is only within the last eighteen months to two years that this method has been successfully employed it is too early to speak of results, which, however, lose nothing by comparison with combined Roentgen and radium therapy data, and there is the added gain that with correct technique there is practically no risk of burning the patient.

2. *Roentgen Therapy together with Radium.*—In Germany the practice is to follow up the radium with Roentgen therapy. Two cases, treated in 1916, were seen in Erlangen; they were both peasant women, and looked as if they had never been ill in their lives. Two other cases seen in Munich, treated at a slightly shorter interval, were equally well. In Stockholm Professor Forssell reserves radium to administer the *coup de grâce* following any exhibition of Roentgen rays.

3 (*a*). *Roentgen Therapy with Copper Electrolysis.*—This is proving the most satisfactory method of approach. There are some added dangers of burning the bowel owing to copper particles being excreted there; but the added benefits to the patient outweigh any disadvantages from this. It seems almost impossible to explain the reason for the great improvement in the condition of the patient, but there is no doubt about it. There is another advantage in that the scar resulting from this form of treatment is loose and supple, and in fungating conditions suppuration is lessened. This form of treatment is specially effective in malignant skin lesions which have resisted other forms of treatment, even including the application of radium.

One case I saw of a middle-aged man who had had an extensive ulcerative epitheliomatous growth of the skin overlying one scapula. He received the usual dose of *x* rays, which had not the slightest effect. After a period of eight weeks he was treated by copper ionization and again irradiated. Within a very short time an appreciable difference was noticeable, and the ulcerated area commenced to close in. This treatment was repeated after a further eight weeks and again after ten weeks. Within three months of the second treatment the lesion was healed and had remained so when seen two years later. Within the last few months, however, a recurrence took place in the middle of the scar, but this has been successfully treated again.

3 (*b*). *Roentgen Therapy and Packing with Paraffin Blocks.*—I was not able to see any results from this or even the apparatus in use, as the Surgical Clinic Roentgen Department was being rebuilt at the time of my visit; but despite its originator's claim and satisfaction, I think that a longer period than twelve months ought to elapse before any definite pronouncements can be made; but should it be successful it will lead to a very great simplification in the technique employed.

It is necessary to impress on workers the dangers as well as the benefits contingent upon the use of these newer methods. With the older methods there was very little if any danger of irritating a growth, but a carelessly focused application of the intensive rays may so stimulate an outlying portion of the growth that the patient soon succumbs to this rapidly growing portion.

Furthermore, the old days of haphazard application are gone—I hope for ever. It is no longer sufficient for the patient to come with a rough diagnosis and receive treatment; it is necessary that he should undergo an extensive clinical, laboratory, and if necessary radiological examination—first, to ascertain the exact situation and extent, so far as is possible, of the tumour; and secondly, the condition of the patient and his fitness to undergo treatment. One of the most important examinations is that of the blood, which serves as the principal indicator of the state of the patient's health, and unless or until this conforms to a certain definite standard treatment cannot be safely undertaken.

The secret of success by these methods is intimate co-operation between clinician, pathologist, physicist, and radiologist; this necessarily means that it is a method which can and should be employed only in large hospitals where this co-operation can be easily obtained. The ideal is that there should be one large central institute in each of the greater cities where these conditions obtain.

Nothing could be worse than the action of some of the smaller hospitals—probably assured by those who do not know that there is no danger attending upon the use of this apparatus—in installing an intensive high-tension outfit, the working of which is positively dangerous in untrained hands. The technique should be employed only when a competent, properly qualified, and trained radiologist can be in attendance the whole time. It is absolutely essential that the greatest care should be taken that the rays are accurately focused, and this entails an accurate knowledge of anatomical relations that cannot be expected of even the best sister or lay assistant. This alone means that this technique should be on no account employed in cottage or even the smaller town hospitals, but only in central institutes in larger towns, as in the former case the radiologist at the best can be only a part-time officer, while the treatment, if justice is to be done it, must have at least one whole-time officer, who must not only personally make every focusing, but must also observe the patient from time to time in order to see that the rays are reaching the desired spot. Apart from the saving in capital outlay, by preventing unnecessary and wasteful duplication of apparatus, the prevention of the tremendous wastage of human life and happiness which would ensue through the inefficient and incorrect treatment that would necessarily obtain at the small local hospitals, is alone an overwhelming argument in favour of the large central institute, where the large number of cases seen and treated, together with the trained staff and opportunities for research and co-operation, conduce to a very much better end-result.

There cannot be the slightest doubt that intensive therapy is a great improvement on older methods, nor that it has come to stay; but it must be remembered, above all, that good and lasting results are only to be obtained by constant care and unremitting attention to detail. It is to be hoped, now that deep therapy is an established fact, that any improvements which follow will come rapidly and be along lines which will allow considerable simplification of detail. It is to be feared, however, that much of the deep therapy apparatus that is being installed in this country will not be properly used and that much discredit will fall on a method that is of very great help in relieving, if not in curing, the dread scourge of cancer.

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THE RESULTS OF TREATMENT IN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.

BY

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THE following paper is a review of one hundred cases of syphilis of the central nervous system treated at the London Lock Hospital during the last two years. All the patients were men. Many more have been treated, but as a great number of these have been lost sight of, and many have been irregular in their attendance, it has been thought advisable to concentrate on one hundred cases only. Space prevents each case from being reviewed in detail, but it is hoped that the illustrative cases are sufficient to prove the main premisses of the writer. These are as follows:

1. A man is much more likely to develop nervous syphilis if his primary sore is of the papulo-erosive type. In the 100 cases under review 64 showed no trace of any scar, 33 showed the slight and almost invisible type of scar which

follows a papulo-erosive chancre when it leaves any scar at all, 2 showed scars typical of a papulo-ulcerative chancre, and in only one case did the scar prove that the original sore was a primary granulating chancre. One may therefore suggest that the smaller and the more transient the original sore the more likely is the patient to develop a nervous manifestation in later years. This no doubt explains why it is that so many patients suffering from obvious nervous syphilis are unable to give any history of an original infection.

2. Seventeen were of the meningeal, interstitial, or late secondary type, and of these two were definite "neuro-recurrences" following salvarsan. In one case a facial paralysis appeared seven weeks after the last injection of neo-salvarsan, and fourteen weeks from the appearance of the sore, the treatment having consisted of 3.6 grams of neo-salvarsan administered in six weekly injections of 0.6 gram. The other case is described in detail later. Of the remaining 15 cases 10 had had no treatment worth mentioning, 3 had been well treated for nearly two years with injections of neo-salvarsan and mercury, and 2 had taken mercury internally—in one case for eighteen months and in the other for a year.

As the result of treatment all these patients were restored to normal health, so far as could be determined both by clinical and pathological means. There is, however, one exception to this statement. It was found that patients who complained of tinnitus aurium never lost this distressing symptom. The above good results only occurred provided the special treatment was followed up by an ordinary course of treatment for the syphilis. If this was neglected, the meningeal symptoms tended to recur and the cerebro-spinal fluid to become pathological again.

3. Degenerative or parenchymatous cases were materially benefited by treatment, so far as their subjective symptoms were concerned. Eighty-three cases were treated, but in no instance was it found possible to bring about any alteration in the physical signs, or to effect any permanent improvement in the pathological picture presented by the cerebro-spinal fluid. The question of treating this type of case was decided, not by the patient's physical signs but by his symptoms. If he complained of severe lightning pains, bladder trouble, or any other of the common symptoms of degenerative lesions, such as are met with in tabes or tabo-paresis, then it was found that the special treatment outlined below would almost certainly improve him. But if he complained of nothing, and the condition was discovered during examination, then it was found best to leave him alone.

4. The condition of the cerebro-spinal fluid was found to be of no value in deciding whether a patient suffering from degenerative neuro-syphilis should be treated. Four of the eighty-three cases were clinically typical tabetics, but the cerebro-spinal fluids were normal. All the same their subjective symptoms were greatly improved by treatment. It was found useless to gauge the efficiency of one's treatment by a progressive diminution in the cell count or in a reduction of the positivity of the Wassermann reaction. Broadly speaking, all the tests employed appeared to be uninfluenced by treatment. It is true that in two of the eighty-three cases the cell count came down to single figures, and in one the Wassermann reaction became negative, but this exception is not sufficient justification for assuming that the change wrought was necessarily the result of the treatment. It is too often forgotten that the tabetic lesion tends to come to a standstill, and in such cases the cerebro-spinal fluid may become normal once more.

5. In contradiction to the generally accepted view, general paretics were improved, and the onset of insanity postponed, provided that they were brought under treatment before they had become obviously stupid and fatuous. When the latter stage was reached treatment was worse than useless and only accelerated the fatal termination. Seven cases were treated in this series, of whom two were already stupid. These latter made no improvement: one is dead and the other in an asylum. But the other five are all holding their own, and three of them are certainly distinctly better. Their cerebro-spinal fluids, however, are just as pathological as on the day when they started treatment, and it may be mentioned in passing that when once the gold sol curve has assumed the paretic form it never changes again.

Rationale and Method of Treatment.

On the first day on which the patient was seen and a clinical diagnosis of nervous syphilis either made or suspected, the cerebro-spinal fluid was examined so as to correlate the pathological findings with what was noted on ordinary clinical examination. A week later the patient was given a maximum intravenous injection of one of the salvarsan substitutes, and, after a further interval of one week, the injection was repeated and immediately followed by drainage of the thecal canal. This method of alternate weekly injections and injections *plus* drainage was continued until the patient had received eight injections and four tappings. In addition most patients received one or more intramuscular injections of intramine to intensify the action of the salvarsan substitutes, and to ward off metallic intoxication. The patient was then put on a potassium iodide mixture (with mercury as well if the case was "meningeal"), and the course repeated in two or three months' time if he felt no better, or if the symptoms returned. Provided that a suitable interval had elapsed since the termination of the last course, it was found that the patient's symptoms were the best indication as to when it was advisable to begin another.

The method outlined above was used in preference to the intrathecal injection of salvarsanized or mercurialized serum, for the following reasons. The treatment adopted is extremely simple, it causes the patient little or no distress, and it can be done with complete safety in the out-patient department or the consulting-room. The patient can get down from the table immediately the drainage is finished, and he is able to go about his ordinary business for the rest of the day. Headache was but rarely met with, and one might add that headache following lumbar puncture was found to be most infrequent when the cerebro-spinal fluid showed evidence of nervous syphilis, whereas it was almost the rule when the fluid was normal.

Recent researches[1] tend to show that the function of the cerebro-spinal fluid is to drain away rather than to supply, and that its withdrawal by lumbar puncture creates a negative pressure with a resulting ultra-filtration of substances from the blood. If, therefore, a drug is injected intravenously and the thecal canal drained immediately afterwards, the drug should be drawn more rapidly through the choroid plexuses on account of the negative pressure thus set up. Furthermore, if one accepts this view of the function of the cerebro-spinal fluid, the whole rationale of intraspinal medication falls to the ground, and one must conclude that the good results which do undoubtedly sometimes follow intrathecal injections of salvarsanized serum are due not to the injections but simply to the drainage. In this connexion the work of Barbat[2] is most striking. He showed that in 26 patients who were given an intravenous injection of neo-salvarsan and tapped immediately afterwards, it was possible, after twenty-four hours, to demonstrate 0.025 part of arsenic per 100,000 in the cerebro-spinal fluids of 23 of them. While, on the other hand, Rieger and Solomon[3] showed that, if three hours were allowed to elapse after the injection, no arsenic could be detected in the cerebro-spinal fluid.

We can assume, then, that drugs injected intravenously do reach the cerebro-spinal fluid, provided that the injection is followed immediately by an auxiliary tapping. Finally, this treatment is absolutely harmless, while it was found that intraspinal injections of salvarsanized serum did in a few cases materially aggravate the lesions. It was because of this that Mr. McDonagh introduced the method now used at the Lock hospitals.

Illustrative Cases.

CASE I.

Male, aged 28. This was a true "neuro-recurrence." He developed a papulo-erosive chancre in the coronal sulcus in April, 1919, and was treated with nine injections of neo-salvarsan and a course of mercury for three months. In October, 1919, he first noticed headache which was worse at night—this was nearly ten weeks after his last injection of neo-salvarsan. When seen in December, 1919, he complained also of deafness, tinnitus aurium, and occasional attacks of giddiness. On examination both the vestibular and cochlear portions of the auditory nerve were found to be affected; there was obvious deafness. Furthermore, nystagmus was present, and the water and rotary tests for vestibular nerve involvement were positive. His course of treatment extended from December 9th, 1919, to the end of February, 1920. On December 9th an examination of the cerebro-spinal fluid gave the following result (a normal result is shown for comparison):

	Patient's C.-S. F.	Normal Result.
Cells	120 ...	1 to 5
Globulin	+ ...	—
Wassermann reaction ...	++ ...	—
Gold sol	000112353 ...	000000000

Examination on December 23rd showed: Cells 210, globulin and Wassermann tests positive, gold sol 000112253.

From this time onwards the findings became less pathological, and when the cerebro-spinal fluid was examined at the end of February, 1920, it was found to be perfectly normal.

This, of course, was a case of meningitis with involvement of both vestibular and cochlear branches of the auditory nerve. From the first drainage the physical signs improved enormously, and, when examined fourteen days after the last, the headache, deafness, and nystagmus had entirely disappeared. The tinnitus aurium, however, persisted, as always happens in this type of case. The rise in the cell count after the first tapping is worth noting, as it was almost a constant phenomenon, especially in cases of meningitis.

CASE II.

A man, aged 34, developed a papulo-erosive chancre on the fraenum in 1917. When seen in February, 1920, he complained of intolerable headache and almost complete loss of memory for recent events. He had had two epileptic fits in the previous month. Clinical examination revealed nothing abnormal except that the deep reflexes were rather exaggerated. His cerebro-spinal fluid was examined on February 2nd and 3rd, 1920, and again on March 27th, 1921. The results are shown in the following table:

	Feb. 2, 1920.	Feb. 23, 1920.	Mar. 27, 1921.
Cells	100	154 ...	3
Globulin	+	... doubtful ...	—
Wassermann ...	++	... doubtful ...	—
Gold sol	001234444	... 011332111 ...	000000000

Treatment extended from February 2nd to April 27th, 1920. The patient's symptoms rapidly cleared up. He continued on mercury and potassium iodide, and, when seen a year later, looked in robust health. He complained of nothing, and had had no more fits. His cerebro-spinal fluid was again examined and, as will be seen by the table, was found to be perfectly normal.

CASE III.

A man, aged 50, developed a papulo-erosive chancre on the glans penis in 1891. He was treated with mercury for four months after infection, but had had no treatment since. When seen on September 20th, 1921, he stated that he had suffered from lightning pains in his legs for the last eighteen years, and from urinary incontinence for over five years. His physical signs were those typical of a case of tabes, and in addition he wore a portable urinal. An examination of cerebro-spinal fluid on September 20th, 1921, gave the following results: Cells 22, globulin test positive, Wassermann reaction strongly positive, gold sol 012441000.

Treatment was at once instituted, and, although it is now only two months since it was started, the patient's general condition has already vastly improved. The lightning pains have entirely disappeared, and, although he still has some frequency of micturition, his bladder trouble is very much better, and he has given up his portable urinal. There is no alteration, however, in the cerebro-spinal fluid picture, and when this was examined on November 16th, 1921, it was practically the same as on September 20th. He still, of course, shows the same physical signs as before, but from his point of view his life is now worth living, and he can pass water almost like a normal man instead of having to let it dribble into a urinal all day long.

CASE IV.

A man, aged 46, developed a papulo-erosive chancre on the glans penis in 1901, and was treated with mercury for eighteen months. When seen on April 6th, 1921, he showed the usual physical signs of tabes *plus* a greatly enlarged Charcot's left knee-joint, which had appeared after a kick from a horse in France in 1917, and for which he wore a special walking apparatus. He complained of lightning pains and headache, and could not exactly remember when they started. His first course of treatment extended from April 6th to June 1st, 1921. His cerebro-spinal fluid was examined on both of these dates, with the following results:

	April 6.	June 1.
Cells	67 ...	36
Globulin	+ ...	+
Wassermann reaction ...	++ ...	++
Gold sold	234455210 ...	122211100

By this time the lightning pains had greatly improved, but the most interesting thing of all was that the Charcot joint was now half its former size, the whole of the redundant synovial fluid having been absorbed. The expensive apparatus which he was wearing was now much too big for him, and he had to discard it. In August, 1921, he began to suffer from headaches again, so he was given a further course of treatment, which resulted in the disappearance of this symptom. At the present time he is free from symptoms, and the effusion in the Charcot's joint has not recurred. His cerebro-spinal fluid picture is still much the same as when treatment was first started.

CASE V.

A man, aged 36, developed a papulo-erosive chancre on the coronal sulcus in 1911, and was treated in Italy for three and a half years with weekly intramuscular injections of mercury (with occasional rests) and potassium iodide by the mouth. He remained perfectly well until the beginning of 1920. At this time he began to neglect his work, and his friends and relatives noticed that he was getting slovenly and neglectful in his habits and appearance. These symptoms gradually progressed, and he was given a long holiday by his firm with instructions to "pull himself together." On June 29th, 1920, he presented himself at hospital. He talked volubly with a markedly slurring speech, the tendon reflexes were exaggerated, and the pupils sluggish and irregular. It seemed obvious that he had developed general paralysis, and this opinion was confirmed by an examination of the cerebro-spinal fluid, which gave the following result: Cells 55, globulin and Wassermann tests both strongly positive, gold sol 55555554342.

He was treated from June 29th to August 10th, 1920, with the result that his mental condition considerably improved. He was given another course in November and December, 1920, and it is worth noting that the pathological picture of his cerebro-spinal fluid on December 1st, 1920, was: Cells 50, globulin test positive, Wassermann reaction strongly positive, gold sol 55555544433.

By March, 1921, his general condition had improved so much that he returned to his work. During 1921 he has received two courses of special treatment. His speech is still slurred, but his mental condition is good. He finds no trouble with his work, and appears rational and intelligent. The last examination of his cerebro-spinal fluid was on November 29th, 1921, and the result was as follows: Cells 22, globulin and Wassermann tests both strongly positive, gold sol 55555555221. One can therefore say that a considerable part of the symptom-complex of general paralysis of the insane has for the time being at any rate disappeared, although the cerebro-spinal fluid picture is still absolutely pathognomonic of that condition.

The cases were all under the care of Mr. McDonagh, and my thanks are due to him for his kindness in allowing me to make use of them, and for his unfailing help and resourcefulness when difficulties were encountered. Without his co-operation the work could not have been done. Furthermore, I cannot conclude this survey without stating that I have merely carried on the work which was begun by the late Dr. Lawrence Shaw, and which was cut short by his untimely death in March, 1921. To him, therefore, belongs much of the credit for the good results obtained. The pathological work was done by Mr. Victor Corbett, and to him also I express my thanks.

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THE TREATMENT AND PROGNOSIS OF LEPROSY.*

BY

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OF the general measures that can be taken for the benefit of lepers the following are essential:

(*a*) Regular meals of abundant food, including plenty of milk. Unfortunately I do not know what is the diet of the majority of patients at Makogai. I only know what the Government ration is, and that is certainly not the complete diet of the patients.

(*b*) A literally open-air life. At Makogai the wards, open-air as they are, are used merely as dormitories, the patients spending practically all their time in the shade of trees, or in shelters or in their gardens.

(*c*) Gentle exercise and daily baths. The latter are very important from the ease with which lepers get small wounds. If the skin is clean there is not much harm from them, but if the skin is dirty they may form the starting point of very serious infection.

(*d*) Happiness of mind, obtained by kindly personal interest, plenty of amusement, and remunerative work. There should be as little petty discipline and interference as possible, and there should be no talk nor hint, whether by staff, patients, or visitors, of the loathsomeness or incurability of the disease.

Leprosy is not incurable, nor is it nearly as loathsome as many other diseases. But though we disapprove, we must still recognize and allow for the stigma that is attached to leprosy, a stigma due in part to the rareness of the disease in civilized countries with a corresponding ignorance on the part of the general public. This stigma will, of course, soon pass away, just as the horror with which sleeping sickness was regarded twenty years ago has disappeared with the increase of knowledge. One can have nothing but praise for the humane campaign of the Hawaiian leprologists for the true education of the public and the consequent eradication of this mediaeval stigma. Leprosy is a disease of such low infectivity that it appears to me to be the ideal disease for treatment at the patient's home. I do not agree that complete compulsory segregation will ever succeed in wiping the disease out of Fiji, whereas segregation at home or in an

* A paper read at a meeting of the Fiji Branch of the British Medical Association, May, 1922.

asylum in the patient's own district (say, in an annexe to the provincial hospitals) might be much more successful.

There is a wide field for simple surgical measures, especially in the septic infections that are so troublesome. Perforating ulcers, often situated superficial to very chronic adventitious bursae, are best treated by excision with the bursae. Rhinitis, iritis, and neuritis are, after sepsis, perhaps the commonest symptoms calling for treatment. Often the intractable neuritis is enormously improved by cutting down on the nerve in the whole length of the enlarged portion and peeling the epineurium from the inflamed nerve. The wound is closed and the relief is immediate. The rhinitis, especially if very fetid, is much improved by irrigation twice daily and packing with sterilized gauze. Leprous iritis must be treated in the same way as iritis from other causes. Septic ulcers heal with remarkable rapidity if they are carefully tended, as is the case at Makogai, where our sisters and dressers perform an average of one hundred and fifty dressings daily.

Specific Treatment.

I have tried, amongst others, the following specific treatments:

(1) By the intravenous injection of tartar emetic. Although two cases were given 43 grains in thirty-five injections and 46 grains in thirty-seven injections respectively, there was no improvement which could be attributed to the tartar emetic. Therefore I regard this treatment as useless for leprosy.

(2) By the intramuscular injection of ethyl esters of chaulmoogra oil. This method is expensive and very painful, and is not as effective as methods 3 and 5 detailed below. I am now trying this drug intravenously. It is well borne, but I have not yet experience enough to give an opinion as to its value.

(3) By intravenous and oral administration of sodium hydnocarpate. This is also an expensive method. It is not as effective as method 5 detailed below, but if one misses the vein and gives the drug subcutaneously the resulting swelling is not so painful as in the case of the oil and is more rapidly absorbed.

(4) By the intramuscular injection of chaulmoogra oil in various mixtures, chiefly according to Heiser's formula. This is painful, and the injections cause a fibrous degeneration of the muscles. Further, there is no knowing how much is absorbed, for months after the injection the oil may be aspirated unchanged from the injection site. Nevertheless, this treatment is valuable and the patients do well on it.

(5) By the intravenous injection of crude chaulmoogra oil. A good average specimen of chaulmoogra oil at room temperature in Fiji consists of about equal parts of solid and liquid constituents. This is sterilized by heat. From 5 to 15 minims of the oil at body temperature are injected once, twice, or three times daily. My present plan is to give a fortnight's rest at the end of each four weeks' injections. The treatment is maintained until a "treatment reaction" occurs, when it is stopped until the reaction is over. I used to give the oil intravenously in a mixture with ether and iodine, or carbolic, but find the crude oil as above to be more satisfactory. During the last two years 35,000 intravenous injections of chaulmoogra oil have been given at Makogai. Syphilis, compensated heart diseases, tuberculosis, and the filarial diseases are not necessarily contraindications. Cases of albuminuria without casts have lost their albuminuria during treatment with this method. Chaulmoogra oil was first given intravenously by Varham, Stevenel, and Noc. They gave it in fine emulsion; but their doses were very small, being about one-hundredth to one-fortieth of the doses given by me. Nevertheless they obtained good results.

Chaulmoogra oil is so unpleasant to take by the mouth or subcutaneously that for years efforts have been made to find an unirritating active principle. One of the earliest of these was "antileprol," rediscovered recently and much praised as the ethyl esters or "Dean derivates" by the Hawaiian leprologists. Another rediscovery is Sir Leonard Rogers's sodium hydnocarpate and gynocardate, the sodium salts of hydnocarpic and gynocardic acids, which were used twenty years ago by Roux.

These derivatives of chaulmoogra oil seem to act in the same way as the oil itself, over which they have no real advantage. Their action is not, I think, due to the purely antiseptic action of the oil, which is stated to be selective for the acid-fast group. Injections of chaulmoogra oil cause a transient leucocytosis which might repay investigation. Whatever the mode of action may be, there is no doubt that chaulmoogra oil taken over long periods does ameliorate most cases of leprosy and cure some. After weeks or months of treatment a stationary case will have a "treatment reaction," evidenced by fever, eruption, and neuritis, hardly if at all to be distinguished during the fastigium from true leprotic fever. After the subsidence of the symptoms, however, a definite change for the better takes place. Treatment must be carried on for years.

Prognosis.

In early and mild cases there is a fair hope of cure or arrest of the disease. In pure nerve leprosy arrest of the disease has already taken place in a large number of the cases admitted to Makogai. I can see no justification for the segregation of these patients, many of whom are not capable of transmitting the infection at the time they are signed up. Yet if such a patient is admitted to the asylum the law requires that he remain segregated for a minimum of two years.

Advanced nodular cases or cases with marked nerve deformity are comparable to cases of generalized tuberculosis and cases of fibrous phthisis respectively, for in the one set of cases the body is little more than a culture medium for the bacilli, whilst in the other the disease, although it may have ceased to be active and infective, has caused immense loss of tissue and deformity. Such cases are, to use the layman's language, incurable.

In many cases leprosy actually prolongs life, for if a man contracts the disease he orders his life sanely with the idea of combating not merely his leprosy but also the possibility of other diseases and vices. I can give no figures for the length of life after infection, but from modern researches, especially those of Sir Leonard Rogers, it appears that in the vast majority of cases infection takes place during the first few years of life. Yet the majority of our cases die at an advanced age.

Lepers do not as a rule die of leprosy. The causes of death in the first 157 deaths at Makogai are as follows:

Tuberculosis 42, septic infection 31, nephritis 18, leprosy 14, exhaustion 5, undetermined 5, tetanus 4, senility 3, pneumonia 3, dysentery 3, suicide 3, amyloid disease 2, malignant disease 2, filariasis 2, peritonitis 2, influenza 2, mitral disease 1, angina pectoris 1, pulmonary embolus 1, cerebral tumour 1, duodenal ulcer 1, intestinal ulceration 1, bronchitis 1, renal abscess 1, general paralysis of the insane 1, epilepsy 1, hemiplegia 1, pharyngeal ulceration 1, diabetes 1, syphilis 1, anaesthesia 1, fatty heart 1.

From the above it is seen that tuberculosis and sepsis are the chief causes of death. The prognosis in civilized races is far and away better than in lower races. Osler, for instance, records the case of a clergyman performing his duties for thirty years whilst a leper, though none of his flock knew of his disease. Similar cases of lepers, unsuspected by the general public, living active beneficent lives, occur in most of the countries in which the disease is endemic, including Fiji.

A SIMPLE PORTABLE APPARATUS FOR CONTINUOUS OXYGEN ADMINISTRATION.

BY

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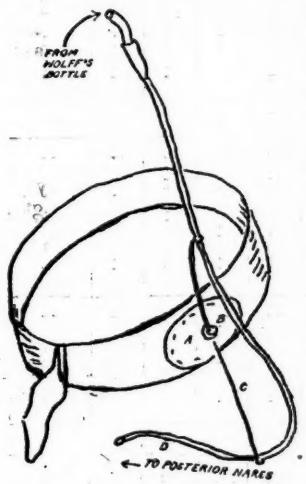
FOR many years oxygen has been largely used in the treatment of pneumonia, but generally it is given sporadically and rather with the idea of meeting some crisis in the patient's condition. Its use as a continuous therapeutic agent came under the writer's especial consideration in the treatment of severe cases of bronchopneumonia, complicating pertussis and measles, in the wards of the infectious block of the East London Hospital for Children. Dyspnoea and cyanosis were of course predominant symptoms in many cases, and the lack of proper oxygenation of the blood appeared to be a serious, often a fatal, handicap to recovery. Physiological, pathological, and chemical work upon the oxygenation of the blood also point in the direction hinted at by these clinical signs. Pneumonia is certainly a condition in which there is often anoxaemia; the place of oxygen in its treatment should therefore be one rather of regular use than of spasmodic effort. The same is true of other conditions complicated by lack of oxygen, such as chronic bronchitis and emphysema, asthma, and many types of heart

disease. In the cases of bronchopneumonia above referred to oxygen was given at first by the usual funnel method. This, however, suffers from many disadvantages: the presence of a nurse is necessary; much oxygen is wasted owing to rapid diffusibility; it is doubtful whether the inspired air has a much raised oxygen tension; and the presence of a large funnel in close proximity to the face is often resented by a restless patient. These are all difficulties which it is essential to overcome in the production of an apparatus which will usefully administer oxygen. An oxygen chamber is, of course, ideal, for the oxygen tension can be exactly regulated. It is a luxury, however, which is restricted to a few institutions of sufficient wealth, and even in them it can only be used in a small proportion of cases, so that the lesser hospitals and the private practitioner must look elsewhere.

Description of Apparatus.

The diagram is nearly sufficiently explanatory of the apparatus which forms the subject of the present communication. A webbing or elastic circlet, whose size can be regulated by a buckle, grips the head firmly but not tightly. On the front of this is an aluminium plate, A, which acts as a firm base for the brass pin B. Through a vertical hole in this passes an aluminium rod, C, which can be fixed at any level by a screw. Loops at the extremities of this hold a rubber catheter (size 6), D; they grip it but allow it to be pulled through to any desired length. Oxygen passes from the cylinder through a Wolff's bottle containing fluid (water or brandy) and standing in a bowl holding warm water. From this it passes to the patient, who receives it intranasally through the rubber catheter.



Method of Use.

Attention to a few details is necessary when fitting the apparatus to a patient. The catheter must first be lubricated, and the best ointment for this has been found to be novocain 2 per cent. in vaseline; it should be inserted to the level of the posterior nares, or a little beyond, but must not touch the posterior pharyngeal wall. If a thread be tied round the catheter to mark the depth to which it is desired to introduce this, a nurse can easily see whether any slipping has occurred and can quickly and accurately readjust it. The lower loop in the aluminium wire should be as near the nostril as possible. The rubber tube to which the catheter is attached can be suspended, in which case the movements of the patient's head are quite unrestricted. The rate of flow of oxygen can be seen by the rapidity of the bubbles through the brandy or the water in the Wolff's bottle, and the speed need be no faster than about 70 to 80 bubbles a minute. Oxygenation is efficient at a much slower rate of flow than with an open funnel.

Mechanical Advantages.

The apparatus is a stable one. Since it moves with each movement of the head the patient is not worried, and soon becomes reconciled to it, eventually forgetting its presence. It is very light and portable. Oxygen is conducted to a position whence much of it is inspired; there is thus actually a very considerable saving in the amount of oxygen used. It is inexpensive.

Clinical Advantages.

It has been used in twenty-three cases of severe bronchopneumonia in children. Cyanosis is not seen in cases using it. Sleep is not interfered with. There is no increase in the number of paroxysms in cases of bronchopneumonia in pertussis; there is thus no local irritation from its presence. Other signs of irritation or resentment are not seen, as a rule, although occasionally it has been found necessary to tie the hands down. Oxygen can be given continuously and indefinitely in an effective and economical manner.

There appears to be no reason why its use should be restricted to children; they provide the more searching test, and success with them should promise at least an equal success in adult cases. It should prove of use in any pulmonary or cardiac condition complicated by anoxaemia and cyanosis. The instrument is made by Messrs. Maw, Son and Sons, of Aldersgate Street, who have agreed that all profits from its sale should go to the East London Hospital for Children.

TREATMENT OF PSORIASIS BY MANGANESE.

BY

JAMES MOORE, F.R.C.S.EDIN.,

BELFAST.

THE only specific treatment of psoriasis, up to the present, is the external use of chrysophanic ointment. Arsenic is useful in anaemic cases, sodium salicylate in cases with a rheumatic history, and thyroid extract in the obese or those with symptoms of hypothyroidism. These improve the disease by improving the patient's general health, but have no specific action.

In the autumn of 1920 I had under treatment two cases of chronic staphylococcic infection, who at the same time suffered from well-marked psoriasis. After six injections of gradually increasing doses of staphylococcic vaccine, my patient informed me that the skin was better than it had been for years. I continued the vaccine for another six injections, but with no appreciable improvement in the psoriasis.

The well-known benefit derived from the use of intramuscular injections of collosol manganese in staphylococcic infections, also the fact that collosol manganese, like staphylococcus vaccine, will bring about an acute recrudescence of streptococcal eczema, suggested its use to me in these two cases. The results were very satisfactory: one was cleared up completely after four injections, and the other after eight.

I have treated in all 35 cases of psoriasis in the past twenty months, of which the following is typical of the procedure adopted.

C., a strong healthy man, aged 43. Sixteen years ago a spot of psoriasis, the size of a sixpence, appeared on left leg, two inches above the external malleolus. In six months the disease had spread to the knee, and entirely surrounded the leg. After three years the other (right) leg was attacked in a similar manner. Six years ago the disease appeared in the lumbar region, and extended on the back as high as the scapula. At the same time both elbows became affected, and it extended on both arms almost to the wrist-joint on the extensor surfaces. About six months before consulting me a patch about four inches square appeared in the right inguinal region.

Such was his condition when he consulted me on January 6th, 1922. With the usual antiseptic precautions, I injected into the deltoid muscle (left arm) 1/2 c.cm. collosol manganese (1/4 c.cm. No. 1 sol., 1/4 c.cm. No. 2 sol. (Crookes), mixed in syringe) and ordered him to use vaseline to assist in removal of the scales, and allay the irritation. On January 10th 1/2 c.cm. collosol manganese was injected into the right deltoid; on the 17th 1 c.cm. into the left deltoid; on the 24th 1 c.cm. into the right deltoid; and on the 31st 1 c.cm. into the left deltoid. On this last date the inguinal patch had almost disappeared, and on the back and elbows islets of healthy skin were showing in the centre of patches.

On February 7th 1 c.cm. collosol manganese was again injected; the improvement continued. On February 14th a further 1 c.cm. was injected. On this date, with the exception of a small patch about two inches square, the disease had entirely vanished. I continued the weekly injections of 1 c.cm. collosol manganese up to the end of March, when the patient was completely cleared. In all the patient received thirteen injections. Vaseline was the external treatment.

From my study of psoriasis and its treatment by collosol manganese I have arrived at the following conclusions:

1. The clinical appearance and behaviour of psoriasis suggest a spirochaetal origin, but neither salvarsan, its congeners, nor mercury have any beneficial effect on the disease.
2. Mixed staphylococcic vaccine will improve the lesions, but will not bring about their complete disappearance, without the use of chrysophanic ointment.
3. Collosol manganese will clear up the disease in from six to sixteen intramuscular injections without the assistance of any external treatment. I prescribe vaseline where there is much irritation.
4. From the action of staphylococcic vaccine, and especially collosol manganese, I would suggest that psoriasis is probably due to a special staphylococcus, or at least bears an intimate relationship to chronic staphylococcic injection.
5. The disease is, in my opinion, auto-inoculable.
6. A number of cases in the same family can be accounted for by living under the same conditions, and subject to the same infection, rather than by heredity.

ZINC IONIZATION AS A DISINFECTANT IN LOCAL SEPSIS ILLUSTRATED BY ITS USE IN CHRONIC OTORRHOEA IN CHILDREN.

BY

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THE proof that zinc ionization is an effective treatment for surface or open septic lesions such as chronic otorrhoea, abscesses in various parts of the body, ulcers, endometritis, pyorrhoea, impetigo, etc., rests on considerations drawn from physics regarding the electrical current, the action of the zinc ion on albumin, the situation of the micro-organisms in the diseases in question, etc.; on laboratory experiments, designed to show that albuminous fluids as well as tissues can be sterilized by zinc ionization; and on clinical results. We owe its use to Professor Leduc.

In the last resort we found our judgement of the applicability of any method of treatment on the clinical results, but often it is difficult, on account of the complexity of conditions in disease, to present them in a convincing form. When we endeavour to do so it is desirable that we should specify the actual factor of the disease which we treat, and what is the actual effect of the remedy. If the disease in question presents one factor alone, or one factor preponderating greatly in its action over other factors, and if the remedy has only one action, or one action preponderating greatly over any other effect, we have a reasonable basis on which to form a judgement. The main factor in maintaining the otorrhoea is septic fluid in the ear. Zinc ionization is an efficient method of sterilizing an infected cavity.

When we are presented with a case of this disease we ask ourselves whether (1) the whole of the septic area is accessible; whether (2) there is any other factor present which would make it not worth while to sterilize the cavity; and whether (3) there is any condition in the patient which would lead to speedy reinfection.

If the sepsis is confined to the tympanum, and does not involve the attic or mastoid, and the perforation in the drum is large enough to allow fluid, such as zinc solution, to enter the ear, treatment by zinc ionization results in rapid and complete cessation of the discharge; this result is consistently obtained.

If besides sepsis another factor is present maintaining the otorrhoea, such as the irritation of a polypus or the exudation from large granulations, it is not worth while to attempt to sterilize the ear until the polypus is removed or the granulations have been treated. In these cases our first duty is to convert the complicated condition into the simple one of tympanic sepsis.

Under the third heading we may note that if the patient has inflamed tonsils, inflamed adenoids, purulent rhinitis or sinusitis, or pyorrhoea, we cannot expect the otorrhoea to cease until the infecting condition is removed.

Subjoined is an analysis of the cases showing the cause of chronicity and the results of treatment.

The clinical results obtained in cases of tympanic sepsis afford evidence of the efficacy of zinc ionization as a disinfectant suitable for applying to exposed tissues, or to mucous surfaces, as in addition to the results being rapidly, completely, and consistently obtained, the remedy (zinc ionization) is the sole or essential part of the treatment adopted.

The only treatment for tympanic sepsis employed at the ionization clinics is zinc ionization with or without the insufflation of boracic acid. In very slight cases the insufflation of boracic acid without ionization is adopted.

A word must be said about consistency. This implies similar, or identical, treatment in similar conditions. It is easy to use the same ionizing solution, but it is not possible to give each area of successive tympanic cavities an absolutely identical dose, as one tympanum may be larger than another and it is not possible to compare the size of each exactly. Again, with regard to similar conditions in successive patients: in one ear there may be a good deal of swelling of the tissues and in a second little, but with these provisos there is approximately similar treatment in similar conditions.

Of the 102 cases considered to be due to tympanic sepsis 83 were known to be cured, 14 were lost sight of, and 5 were still under treatment; 7 of the 14 only visited the clinic once, and 3 of the 5 had only made one visit. In none of the other 7 lost sight of or the other 2 still under treatment had the attendance at the clinic been of long duration. Of the 83 cases which were known to be cured 58 were cured with one treatment, and 12 more required only the insufflation of boracic acid on the second visit a week after the first treatment. The remainder required either a few more ionizations or insufflations of boracic acid, or both.

Cases of Otorrhoea in Children.

Classification of the "Cause of Chronicity" in each Case.	Total.	Cured.	Lost sight of.	Still under Treatment.	Referred for operation or other treatment.
A. CHRONIC MIDDLE-EAR SUPPURATION.					
I. *Treated by Ionization.*					
1. Tympanic conditions:					
Tympanic sepsis	102	83	14	5	0
Tympanic sepsis + granulations ...	40	23	6	9	2
Tympanic sepsis + polypi	19	5	3	5	6
Tympanic sepsis + cholesteatoma in tympanum	3	1		2	
Tympanic sepsis + pocket formed by adhesion	1		1		
Tympanic sepsis + caries of malleus	1		1		
2. Tympanic conditions + involvement of the Eustachian tube, pharynx, or nose	10	3	3	2	2
3. Tympanic conditions + involvement of the mastoid:					
(*a*) Mastoid...	59	9	6	8	36
(*b*) Attic	15		2	5	8
(*c*) Radical (operation already) ...	1		1		
(*d*) Operation already (not radical)	5	2	1	1	1
4. Tympanic conditions + cause undetermined	3		1	1	1
5. Tympanic conditions + external otitis	5	5			
	264	131	39	38	56
II. *Not Treated by Ionization.*					
Tympanic sepsis	18	16	2		
Tympanic sepsis + granulations ...	1			1	
Tympanic sepsis + polypi	8		1	1	6
Tympanic sepsis + external otitis ...	1	1			
Tympanic sepsis + mastoid	1				1
Tympanic sepsis + radical mastoid cavity	7	1	0	1	5
	36	18	3	3	12
B. EXTERNAL OTITIS.					
I. Treated by ionization	3	3			
II. Not treated by ionization	3	3			
C. ACUTE OTITIS MEDIA.					
Not treated by ionization	1	1			
	7	7			
Totals	307	156	42	41	68

The remainder of the table represents (1) cases in which attempts were made by special apparatus to introduce the zinc solution into areas more or less inaccessible, such as the mastoid antrum or a mastoid cell; (2) cases in which an effort was made to reduce a complicated condition to a simple one; and (3) cases in which it was necessary to free the patient of a condition which would lead to reinfection, such as inflamed adenoids, or inflamed tonsils, or an inflamed external auditory meatus.

In all the cases of chronic otorrhoea sepsis is the basic factor causing chronicity; it is for sepsis that the use of zinc ionization is desirable. Zinc ionization is, in my opinion, as a result of what I have seen and read, the remedy *par excellence* for the septic factor present in endometritis, abscesses, boils, pyorrhoea, or accessible wounds. It should, I believe, be adopted in sepsis of the uterine cavity following infection in childbirth.

In treating the various conditions mentioned the doctor who intends to use this form of treatment should give the treatment himself. He alone knows the local condition, he alone has the requisite knowledge of the condition in his patient. The electrical knowledge requisite to practise ionization is easily acquired. The knowledge of the conditions in the patient takes much trouble to learn, and the only person who has a chance of gaining this knowledge is the person who is in charge of the case.

ACCORDING to a report received from the Health Section of the League of Nations there is a serious increase in the incidence of cholera in the Ukraine. During the last three days of May 360 new patients suffering from cholera were admitted into the Odessa hospitals, where 1,000 cholera cases were under treatment.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

INFECTIVITY OF ARTIFICIAL DENTURES.

As an early and enthusiastic upholder of the opinion that dental decay is frequently the cause of a sepsis resulting in arthritis and periarthritic inflammations, as well as other inflammatory manifestations, may I draw more attention than is at present given to the fact that artificial dentures are also a cause of many inflammatory affections of the throat and intestinal tract? I would even go farther and say that they may be indirectly, if not directly, the cause of joint affections also. Having found out that a person is edentulous one is rather apt to pass on to other fields of inquiry, but it is well to inspect the dentures, for there is a good deal to be learnt from doing so; the mouth also should be inspected and all the more carefully if the throat seems somewhat inflamed. A stump of a tooth may be found—I have recently found in two elderly people who had arthritis a recently erupted wisdom tooth decayed. A decayed tooth amongst sound ones is bad enough, but under an artificial denture it is ten times worse. Apart, however, from the presence of a bad tooth, I am quite certain that dentures are far more frequently than is generally recognized the cause of pharyngeal catarrh and intestinal troubles, the latter being often erroneously put down to the patient not chewing food sufficiently, whereas it is really due to the infective nature of the teeth. I have examined a great many now, and closely questioned my patients, and I find that even those who go to the best, or at any rate the popular, dentists have not been instructed either as to the importance of caring properly for the teeth or the dangers of not doing so. Artificial dentures cannot be kept clean without the use of some disinfectant. Some people are very particular in cleaning them, and succeed pretty well at the expenditure of a considerable amount of time, but I have never seen any from which some of the peculiar fur which collects upon them could not be scraped off, and from which an abundant and varied crop of organisms may be cultivated, as has been done for me by Drs. Sinclair Miller and Johnstone, pathologists of this town. This fur is most tenacious, and seems to be a microbial and yeast growth embedding in its meshes the salts of the saliva, very much akin, no doubt, to the tartar which collects on natural teeth.

Some people retain their artificial teeth in the mouth at night; this helps to preserve the contour of the face, and in the case of suction plates helps to retain them more firmly in position, and in some cases is absolutely necessary, particularly for public speakers.

Artificial teeth ought to be put into an antiseptic all night if they are taken out of the mouth. If they must be kept in, they ought to be put into an antiseptic solution for half an hour at night, and again for half an hour in the morning. The toothbrush, or plate-brush, should always be kept in an antiseptic; it will be an important thing to get toothbrushes which will stand this; the best bristle ones seem to stand it pretty well. This appears to be putting an additional burden on the patient, but, as ought to be explained to him, it is quite the reverse. There is then no longer any trouble in keeping the artificial dentures clean, no fur collects on them, and all they require is to be lightly brushed with a toothbrush or rinsed under the tap. I am quite certain that if the mouth can be kept more or less aseptic intestinal troubles and throat irritations will often be found to clear up in a wonderful way. In regard to the nature of the antiseptic to be used, I think I must leave it to the dentists to find out what will not act upon the artificial teeth or gums they provide; boracic acid I have found to be not strong enough to arrest the growth. It is rather important that the disinfectant should be cheap, as used twice daily it soon runs up a rather formidable bill.

Harrogate. W. D'OYLY GRANGE, M.D.

A GLANDULAR FEVER.

By the term "glandular fever" I do not mean that disease so designated in our textbooks, but one which a recent correspondent in the JOURNAL (April 16th, 1921, p. 582) has mentioned, of which I have had the opportunity of seeing five cases. It is an infectious disease of children characterized by a gradual onset, in fact so gradual that patient may walk into the consulting room complaining only of an enlarged neck and malaise. The temperature is rarely over 101°, and a mild inflammation of tonsils and palpable cervical and inguinal glands are succeeded by a prolonged convalescence. That it is of infectious origin is borne out by the following evidence. There is slight inflammation of the tonsils, lymphatic extension, moderate leucocytosis, and moderate fever. I would say it was not contagious, inasmuch as my five cases were in widely separated families, and there was only one case in each family.

The first symptoms to appear are those of malaise and irritability, which last for a few days, to be followed by swollen cervical glands, which cause some difficulty in movement of the jaw. On the second or third day after this the inguinal glands become palpable and occasionally tender. On examination of the throat one finds a superficial redness of the tonsils, the tongue is coated, and in a severe case the gums and teeth are covered with sordes, the corners of the mouth crack, and the lips have herpes with a resulting slight exfoliation. I have not observed nausea, but anorexia and constipation are the rule. The spleen and liver are not enlarged. The cervical glands are most markedly enlarged below the angle of the jaw; in fact, in three cases they were so swollen that I feared suppuration. The enlarged chain follows the anterior border of the sterno-cleido-mastoid muscle down to the sternum; the glands are distinct. In the inguinal glands they never reach the size of the cervical. The urine in three cases showed albuminuria; and in all cases there was a leucocytosis of 12,000 to 15,000; the temperature ranges from 101° to 102°. There is a slight increase in heart rate, and the chest is clear. In two cases there was slight enlargement of the legs. In one case there was otitis media. The child complained of earache in both ears, but only the left ruptured and discharged. I will relate the course of the one fatal case of the series.

I was called one Sunday morning to see a male child of 4 years who had been sick about a week. The cervical and inguinal glands were enlarged; the tonsils slightly enlarged, some swelling; a rather solid oedema of the legs; the heart and chest were normal; no temperature; slight leucocytosis, and a trace of albumin. The following Tuesday, when passing the home of the patient, I dropped in. On this visit I found the tonsils normal in colour, the swelling in the legs gone, the inguinal glands reduced in size, and the child feeling much better. I felt optimistic, and was much surprised to get a hurried call that afternoon. The child after a moderate meal at noon had gone to bed for a sleep and on awaking was gasping for breath. When I arrived I found the child making desperate attempts to get its breath, all the voluntary muscles of respiration being brought into play. The extremities were becoming cyanosed; the heart's action was fast and feeble, and the child was at times delirious. This continued in spite of stimulation and inhalations for nine hours, when the child died. At times the cyanosis would clear up, the child would become perfectly conscious, and the efforts at breathing less laborious, only to be succeeded by the former condition.

Discussion.—Among the possibilities in the fatal case might be considered involvement of the mediastinal glands from direct extension with consequent pressure. Secondly, thymic death, the infection calling for marked action on the part of the thymus, which responded by oversecretion, which had a depressing influence on the central respiratory centre, and hypertrophy with tracheal pressure. I regret that I was unable, because of violent efforts, to make a proper percussion of the sternum for dullness. As there was no suppression of urine and only a trace of albumin I doubt if the condition of the kidneys contributed to the fatal issue. As heart changes only appeared after the signs of asphyxia had continued for some time, I do not consider that pressure of the cervical glands on the vagus was an important factor.

Treatment.—Iodine ointment was rubbed into the glands once a day, followed by a hot linseed poultice, a mild mouth-wash, and a gargle used every two hours. Internally much liquid was given as a diuretic, with small doses of calomel often repeated for the bowels, and a tonic of iron, quinine, and strychnine.

I very much regret my inability to obtain a *post-mortem* examination, and I did not obtain a differential blood count on the cases.

Sharbot Lake, Ontario. S. F. LEAVINE, M.D.

A BLOOD STAIN FOR GENERAL PRACTICE.

HISTOLOGICAL examination of a stained blood film is of more service in general practice than is usually supposed, but it is not employed as often as it should be because it demands the use of delicate (and incidentally expensive) reagents, which require careful control because different samples differ so widely in their histological reactions. The practitioner, however, can often derive valuable assistance from a study of the histology of the blood (I do not mean a total count of cells), and it is frequently important that this should be made as quickly as possible. All that is required for rough clinical diagnosis is to determine the presence or absence of a leucocytosis, the presence of abnormal forms, and the proportion of the different cells present in the film. By this

means not only can intrinsic blood disease be detected but valuable assistance can often be obtained in the diagnosis and prognosis of acute disease. For instance, internal suppuration and typhoid fever can be recognized in the early stage, in the latter case long before the Widal reaction is positive. Many other instances can be given.

After much experimental work I have succeeded in devising a stain which does not necessitate the use of fine chemicals or of a delicate balance and volumetric apparatus. The method is as follows: Two test tubes are half filled with ordinary methylated spirit. To one about a small salt-spoonful of ordinary commercial methylene blue, and to the other the same quantity of orange G, is added. The precise amount does not matter so long as there is more than enough to produce a saturated solution. The tubes are boiled over a spirit lamp for about a minute and allowed to cool; the solutions are then filtered. By this means a saturated solution of each dye is obtained.

Roughly, one-third of the orange G is then added to two-thirds of methylene blue, the precise proportion again not being of vital importance so long as the methylene blue is in marked excess. The mixed stain is then filtered on to the blood film and allowed to remain for two minutes. Approximately an equal quantity of tap-water is then added with a fountain-pen filler to the stain on the slide and the solution is mixed by rocking the slide or stroking the top of the fluid with a penholder. This dilute stain is allowed to remain for two minutes. The slide is then drained and flooded with tap-water and left for a further two to five minutes. The film is then drained and blotted on filter paper (or fluffless blotting-paper) and allowed to dry in the air; heat should not be employed. The stained film should appear of a yellow-green colour. If an immersion lens is not available the specimen should be mounted in balsam with a cover-slip and examined with 1/6 in. objective. The scrutiny of the dried film without a cover-slip with an immersion lens is, however, easier. The red cells are stained yellow and the nuclei of the white cells blue, the nuclear structure being well defined. The granular and non-granular cells are quite distinct, it being easy, for instance, to distinguish between a mononuclear cell and a myelocyte. This method is not intended to supplant a further detailed examination by the haematologist. For the detection of primitive forms and an estimation of the resistance of the patient to the particular disease, and in prognosis generally, the services of a haematologist are usually required, but unstained films can be sent subsequently to a laboratory if required. I suggest, however, that the use of this stain and the rough information that can be derived therefrom may be of considerable assistance to the busy practitioner, and obviate the postponement of the diagnosis until a report has been obtained from a laboratory.

London, W.C. A. KNYVETT GORDON, M.B., B.Ch.Cantab.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

SUSSEX BRANCH: BRIGHTON DIVISION.

THE final clinical meeting of the session was held at the Royal Sussex County Hospital on June 15th. Tea was provided at the hospital, and a hearty vote of thanks was proposed by Dr. L. A. PARRY, honorary secretary, to the members of the honorary staff for the great assistance they had given in making the series of meetings so successful.

Mr. H. N. FLETCHER showed two cases of diverticulum of the bladder.

In the first, a man of 63, the pouch was a large one, of practically the same size as the bladder itself, as shown by bismuth injection and *x* rays. It was lying to the left side of the bladder, and the two communicated by a neck the size of one's thumb about midway between their adjacent surfaces. The symptoms were an intractable cystitis, with foul urine following a preliminary wash-out of the bladder, and a residual urine of about 16 ounces. The pouch was discovered accidentally during an operation for stone. After an attempt to shut off the pouch from within the bladder, draining the former meantime through a small incision in the outer border of the left meatus, which failed after a week, the pouch was excised extraperitoneally through an incision as for exposing the lower end of the left ureter. The operation was tedious, owing to the adhesion between the chronically inflamed pouch and the peritoneum and extraperitoneal fat above, and the pelvic fascia below and around it.

The second case was that of a man of 67, who had had a stone removed from the bladder two years previously. A recurrence of frequency and pyuria had taken place eighteen months later. A skiagram showed two large stones, and per rectum a hard mass was felt just above the left lobe of the prostate. One stone was found at operation to be lying free; the second was firmly embedded in a diverticulum, the narrow neck of which was situated just to the outer side of the left ureteric orifice. Through the neck, and grasped by it, protruded an excrescence from the stone. The neck was dilated with forceps, and eventually had to be nicked with a hernia knife before the stone could be extracted. The position of the pouch rendered its removal a very difficult matter and it was not attempted.

Mr. Fletcher also showed a specimen of volvulus of the small intestine in a newly born child.

When first seen, forty-eight hours after birth, the child had passed nothing per anum, was vomiting meconium, and was very distended. A finger passed readily into the rectum. A laparotomy was immediately performed. Distended coils of small intestine presented, and at a point about eight inches above the caecum the bowel was half twisted upon itself. This was undone, but the child died twelve hours later, still vomiting meconium. At the necropsy the small intestine below the twist was contracted, and the whole colon was small, firm, and solid-feeling, and nowhere larger than one's little finger. There was no atresia and some bile had passed down to a point just beyond the hepatic flexure. Below this the bowel contained firm, light grey, inspissated mucus only. It was evident, therefore, that the volvulus had occurred at some period of intrauterine life, and had only caused trouble when peristalsis started at birth.

Mr. J. H. TURTON showed three cases:

1. A case of pseudo-coxalgia in a boy aged 14 years, with six weeks' history of pain in right hip with limp. No history of injury. General health unaffected. Slight limitation of abduction and of internal rotation, otherwise movement of right hip full, no tenderness or swelling. No visible wasting, three-eighths of an inch shortening. Radiograms showed marked flattening of the upper part of the femoral head with widening of the neck of the femur. This was considered to be a typical case of this condition, though the age was rather more than the usual.

2. A case of lumbo-sacral meningo-myelocele in female infant aged 4 months, with paralysis of lower extremities and commencing hydrocephalus.

3. A portion of glass tubing, 3½ inches long, removed by suprapubic cystotomy, and stated to have been broken off a week previously during irrigation of his urethra by the patient. Anterior urethroscopy showed no injury to the urethra and cystoscopy a few small haemorrhages only. Foreign body heavily encrusted with phosphates.

Mr. A. BERESFORD showed a case of acute osteomyelitis of the right clavicle in a boy aged 13 years; total diaphysectomy was performed, and re-formation of a new clavicle took place in six weeks.

The patient was admitted to hospital on May 3rd, 1922. He was very ill with temperature of 104°, pulse 120, and swelling and redness over right clavicle. He had been taken suddenly ill two days before with pain in right clavicular region. Emergency operation: long incision over clavicle; bone found denuded of periosteum and lying in a bag of pus. The whole bone was removed and the wound packed open. Patient nursed in bed with sandbag between shoulders. At the end of four weeks there was definite formation of a new bone. A radiogram showed traces of new bone. On June 15th the wound was completely healed. A new clavicle had been formed, together with complete restoration of function of the right arm. No early massage or movements were employed.

Mr. FITZMAURICE-KELLY showed a case of gummatous arthritis of the elbow.

The patient, a man 49 years of age, came to the out-patient department complaining of swelling and stiffness of the left elbow, of six months' duration, which he attributed to an injury three years previously. The movements of the elbow were limited, the range of flexion and extension being from 160° to 80°; pronation and supination about 50 per cent. of normal. All these movements were painless. There was general thickening around the joint; a large cystic swelling over the back of the external condyle, and several hard nodular masses, about the size of a Barcelona nut, above the olecranon and under the triceps. Over the ulna, two inches below the olecranon, was a scar, the site of a swelling similar to that over the external condyle which discharged six months ago and took two months to heal. He also complained of pain in the right leg. There was marked irregular thickening of the crest and subcutaneous surface of the tibia. Skiagrams showed periostitis of the tibia and the upper end of the ulna. There was a history of a venereal sore twenty years ago.

[The report of the Wassermann reaction, received since the meeting, was "Positive 4."]

Mr. Fitzmaurice-Kelly also showed a case of osteochondritis of the upper end of the femur.

The patient, a boy of 14, was brought up with an indefinite history of limping for several years, but the condition had become much more marked in the last two months. The boy walked with a considerable limp, but briskly, and without pain. On examination there was marked wasting of the right thigh, which was two inches less in circumference than the left, and the limb was shortened three-quarters of an inch on measurement. Flexion was free and painless; extension was limited, the permanent flexion at the hip-joint being 20°. Rotation was very limited, and no abduction was possible. The skiagram showed flattening of the upper surface of the head of the femur, some deepening and irregularity of the upper part of the acetabulum, and enlargement of the clear articular space.

Reports of Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

A MEETING of the Section of Pathology was held in May, when Dr. T. T. O'FARRELL read a paper on a case of acute leukaemia with intracranial haemorrhage, illustrated with microphotographs and lantern slides, and the organs of the case. The President, Dr. O'KELLY, believed that many cases of haemorrhagic inflammation might turn out to be acute leukaemias if the blood during life and the organs *post mortem* were properly examined. Dr. O'SULLIVAN said that leukaemia was to be looked on as a tumour, and the larger proportion of nucleated cells in the capillaries of the liver and spleen compared with those in other blood vessels, as well as the definite collections of cells round the vessels of the brain, resembled to some extent the formation of secondary growths. Dr. CROFTON discussed the rise of temperature in the case. He had lately had a case of puerperal fever in which he had failed to obtain bacteria from the blood. If the fever in this case was not due to organisms but was of the nature of a tumour, the reason for the rise of temperature was obscure. Drs. SPEARES, WIGHAM, and BOXWELL also discussed the classification of leukaemias, acute and chronic lymphatic, acute early and chronic myelogenic, and others, with the different cells observed; and Dr. O'SULLIVAN stated that Mallory had reported that a number of cases of acute myelogenous leukaemia had been taken for lymphatic leukaemia. Dr. O'FARRELL, in reply, said attention had been directed during life to a search for bacterial infection, so that any possible changes in the cytology of the blood had been overlooked. The most probable diagnosis had appeared to be cerebro-spinal fever, but no cocci had ever been found. The case had apparently no terminal infection.

Dr. CROFTON read a paper on a new micro-organism, morphologically and culturally like the influenza bacillus, isolated from diphtheritic roup of fowl. With an antigen of this microbe he was able to prevent and cure the disease, and with a pure culture of the microbe to reproduce the natural disease and recover it from uninfected hens obtained from an uncontaminated source.

A meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland was held in May, with the President, Dr. A. R. PARSONS, in the chair, when Dr. L. ABRAHAMSON showed: (1) Electrocardiographs of a case of auricular fibrillation with normal rhythm still maintained five and a half months after treatment with quinidine; and (2) a case of complete heart-block with multiple ventricular extra-systoles.

Colloid Therapy.

Dr. WALTER SMITH read a paper on the principles of colloid therapeutics. He said that colloids were to be regarded as an intermediate stage between coarse dispersions of matter on the one hand and true molecular solutions on the other. They simply represented a realm of matter differentiated, for practical purposes, from a continuous series of systems. The line of subdivision between colloid and molecular systems was arbitrarily drawn at a magnitude of particles of 1/1,000,000 mm. in diameter. A large number of familiar examples of colloid dispersion among solids, liquids, and gases was afforded by such cases as foams, fogs and clouds, milk, smoke, liquid collosols, ruby glass, etc. The latent image on a photographic plate was a colloid phenomenon. Fine subdivision of matter involved an immense increase of surface area, and this was a point of capital significance in the interpretation of many chemical physiological phenomena. Several illustrations of the therapeutic action of colloids were given, and some experimental demonstrations illustrated—for example, the germicide action of colloidal silver, the influence of colloid manganese in controlling boils and other suppurative infections, and the use of colloidal copper. Any singularity in the operation of colloidal remedies might be ascribed to three chief factors: (1) Extremely minute subdivision (dispersion) of particles between the limits of 1/10,000 and 1/1,000,000 mm.; (2) consequent enormous increase in surface area (the reaction velocity of solids with liquids was proportional to the area of contact; adsorption played an important part); (3) activity of surface energy, the product of surface area and surface tension. Up to the present there was no good evidence that the chemical or pharmacological action of substances in the colloid state differed fundamentally from that in true solution, otherwise than in the gradual slow effect due to the minute size of the particles and the enormous increase of surface area.

Dr. R. J. ROWLETTE read a note on the subject of rheumatoid arthritis and allied conditions, and mentioned various doctrines that had been held as to the causation of rheumatoid arthritis; he expressed his own view that the various forms of subacute and chronic arthritis were infective in origin. In his own experience the primary focus was most commonly in the mouth. He regarded many cases of myalgia, lumbago, and sciatica as of similar origin. He recounted his experiences of treating rheumatoid arthritis and allied conditions by autogenous vaccines, and regarded the result as supporting his view of causation.

MANCHESTER PATHOLOGICAL SOCIETY.

A LABORATORY meeting of the Manchester Pathological Society was held on June 14th, the President, Mr. J. HOWSON RAY, being in the chair.

Mr. GARNETT WRIGHT showed a series of specimens illustrating varieties of carcinoma of the rectum, and in addition a curious breast tumour for diagnosis. Mr. PLATT showed three interesting bone tumours raising points of diagnosis and treatment. The use of Coley's fluid was discussed by the PRESIDENT, Mr. MORLEY, and Mr. PLATT, the last-named speaker believing that the majority of alleged cures by means of this fluid to have been in cases of myeloma.

Dr. SELLARS presented a series of six specimens from the pathological laboratory of the Children's Hospital. One of these, after examination by members, was believed to be an intussusception of the appendix alone into the caecum. It was discovered by Mr. Warburton on exploring a palpable tumour in the right iliac fossa of a child of eight years. Resection was necessary. The specimen showed the appendix completely inverted within the caecum. Other specimens shown were bronchiectasis in a child, sarcomata of the small intestine and of the caecum, and the spleen from a splenic anaemia. Mr. DIGGLE showed a growth of the tonsil involving the larynx.

Mr. GEOFFREY JEFFERSON exhibited a histological section of a secondary carcinoma of the Gasserian ganglion. The primary growth was in the lung. The patient suffered from severe continuous facial neuralgia with hypoaesthesia, "anaesthesia dolorosa." The ganglion was explored, but nothing abnormal detected at operation. At autopsy six weeks later it was seen to be slightly swollen, and section proved it to be infiltrated with carcinomatous cells.

Mr. JOHN MORLEY showed two specimens of intrathoracic goitre and an acute perforative diverticulitis of the pelvic colon. He also showed a very instructive specimen—the oesophagus and diaphragm from a case of cardiospasm, the patient dying from perforated duodenal ulcer. The oesophagus was widely dilated, with thick muscular walls. Opposite the oesophageal opening in the diaphragm the gullet was strongly contracted. A histological section showed absence of fibrosis there. Mr. Morley thought that the crus of the diaphragm had not compressed the oesophagus, as the latter was not flattened but concentrically contracted. In discussion, Mr. JEFFERSON described a somewhat similar case, secondary to ulceration in the duodenum, but in this case the oesophagus was not hypertrophied. Mr. DIGGLE spoke of his own observations, and those of his colleagues at Ancoats Hospital, on the part played by the diaphragmatic crus in these cases.

THE eighty-first annual meeting of the Medico-Psychological Association of Great Britain and Ireland will be held from July 17th to 21st, inclusive, in the Royal College of Physicians and the University of Edinburgh. The first two days will be given up to meetings of the Parliamentary and Educational Committees and the Council. The annual meeting will begin at 10.30 a.m. on July 19th, at the College of Physicians; afterwards Dr. Ninian Bruce will read a paper on the treatment of early cases of mental disorder, and a luncheon will be given by the Chairman and Managers of the Royal Morningside Hospital. In the afternoon Professor George M. Robertson will deliver his presidential address on "The hospitalization of the Scottish asylum system," and the annual dinner will be held that evening in the Hall of the College of Physicians. On July 20th addresses will be given by Sir E. Sharpey Schafer, Sir F. W. Mott, Dr. David Orr, Professor J. C. Meakins, Dr. J. J. Graham Brown, and Dr. W. H. B. Stoddart. On July 21st a discussion on the treatment of mental diseases will be opened by Dr. Chalmers Watson.

Reviews.

POISONS.

THE scale on which the new *Traité de Médecine*,[1] edited by G. H. ROGER, F. WIDAL, and P. J. TESSIER, has been planned may be gathered from the fact that the sixth volume, wholly devoted to poisons, contains 506 pages, and that there are to be at least twenty-two volumes.

In a general introduction, occupying fifty-four pages, to the volume before us, Roger begins by making an attempt to give a definition of a poison. He opens with the proposition that any substance may be regarded as a poison which is capable of deranging the life of the anatomical units of the body by altering, directly or indirectly, the medium in which they live. Toxic substances, therefore, may come from without, or they may arise within the body. If this be accepted, poisoning would be defined as the sum of the disturbances induced, and would include the effects of lesions arising from a change in the chemical constitution of the internal medium. The human body is constantly on the verge of becoming poisoned. In evolving energy, and in the passage of bodily material from a complex and unstable condition to a simpler and more stable form, new substances arise within the cells and are thrown out into the lymph which bathes them; if not eliminated, they become possible causes of poisoning. The mineral salts in our food, the chemical and other products formed by intestinal ferments and by micro-organisms, may also give rise to intoxication. Roger describes at length several sources of auto-intoxication, and shows how some poisons, during their stay in the alimentary canal, are neutralized by the digestive juices: alkaloids, for example, may be precipitated and rendered harmless by any tannin which may be present; other materials, on the other hand, may become more toxic. Insoluble carbonates may be converted into soluble chlorides by the hydrochloric acid of the gastric juice, calomel may become sublimated, and potassium cyanide be converted into potassium chloride and hydrocyanic acid, and as the conversion of this last substance occurs mostly when the gastric juice is fairly free in the stomach this circumstance explains why potassium cyanide destroys life more quickly during digestion than when the stomach is empty. Roger reminds us that the conditions which regulate the absorption of general anaesthetics are of a physical order, as Paul Bert indicated, for the action of gases and vapours upon living tissue depends upon their partial tension. Blood circulating through the lungs absorbs any gas which reaches these organs until the tension of its vapours is equal to that of the gaseous mixture with which it finds itself in contact.

The various channels of absorption are discussed at length. Many attempts have been made to discover a relation between chemical constitution and the poisonous action of a substance, but no satisfactory result has yet been reached. In 1867 Rabuteau stated that metals are poisonous in proportion as their atomic weight increases and their specific heat becomes less, but this opinion is no longer held, for toxicity is now believed to be rather a question of the degree of the molecular dissociation of the salts of metals, estimated by their electrical conductibility. The complexity of organic bodies renders the determination of their toxicity difficult. It is known that the substitution of one radicle for another in such bodies considerably modifies the physiological action. As regards alcohols French chemists are of the opinion that their toxic properties increase with their atomic weight and point of ebullition. Before being absorbed into the blood poisons may undergo changes which may be favourable or unfavourable. A poison injected under the skin is less harmful than when passed into a vein. Strychnine can be injected into the foot of a guinea-pig after the particular vein of the leg has been tied, and when a few hours afterwards the ligature is removed no poisoning occurs, either because neutralization has taken place or because in consequence of the slow absorption of the poison elimination has kept pace with it. The harmful effects of a poison arise when it reaches the capillaries. Blood corpuscles have the power of transforming poisons; so too has the liquor sanguinis in consequence of its alkalinity. Poisons can be retained in the body for a long period; for example, lead in the intestine in the form of sulphide, in the skin as sulphate, and in the skeleton as lead phosphate. Objection may be raised to the chemical forms in which lead is thus stated to be combined, for after all only minute quantities of the metal are present in the body at a particular time. Roger's remarks concerning the retention of poisons in the foetus are interesting and valuable both as regards lead and carbon monoxide, also as regards the passage of toxic bodies from mother to foetus and from foetus to mother. In some instances the foetus shows more resistance to certain poisons than the mother. This is said to be true of chloroform, chloral, and carbon dioxide, the explanation being the poorer development of the nerve centres in the foetus.

The subject of lead poisoning is dealt with by Marcel Pinard. Lead has seldom been used as a poison by criminals. It used to be thought that elderly people and the dark races were to some extent immune to lead poisoning, but this is no longer accepted. The reviewer has met with rather a serious form of plumbism in a negro. On one point practically all physicians are in accord—namely, that alcohol predisposes to the production of lead poisoning. Pinard describes the various channels by which lead enters the body; the alimentary canal is, he considers, the most frequent. He is of opinion that particles of lead become encircled in the digestive mucus by macrophages, and are then carried into the lymph channels or by the blood vessels to the organs wherein they become fixed. The symptomatology of plumbism is fully described. During colic Pinard states that the liver shrinks in size owing to contraction of the hepatic blood vessels. He states, also, that glycosuria may occur during colic, but this is not the experience of British physicians. The presence of basophil red corpuscles in the blood, paralysis of muscles, and morbid states of the kidney receive adequate attention.

Balthazard is responsible for the articles on arsenic, mercury, carbon monoxide, and illuminating gas. In its pure state arsenic is not poisonous, but it is readily oxidized, and when this has taken place toxic properties develop; 2 mg. of arsenious acid per kilo weight of body may when absorbed cause death in twenty-four hours. There is a personal idiosyncrasy to arsenic. When given by the stomach the symptoms will vary according to the vomiting which has taken place and any diarrhoea which may possibly have been induced. Graduated doses create a tolerance to the drug, as was shown years ago among the Styrian peasantry. Occasionally arsenical poisoning occurs in an epidemic form, as happened in the Midlands of this country some years ago, owing, as Reynolds of Manchester showed, to the consumption of beer in the manufacture of which contaminated glucose had been used.

The acute and chronic forms of mercurial poisoning are fully considered. Balthazard mentions the two theories advanced to explain the action of mercury. Some writers believe that mercury can only act by becoming converted, after absorption, into corrosive sublimate, and that this salt circulating in the blood forms a chloro-albuminate of mercury peroxide; others are of the opinion that the salts of mercury are primarily reduced to the vapour of the metal, for only in this form is mercury said to be capable of being absorbed.

The subjects of carbon monoxide poisoning, and of poisoning by opium, alcohol, cocaine, war gases, etc., are all attractively discussed.

The volume is a valuable contribution to our knowledge of the various subjects dealt with, and ought to find a place in the library of medical men and physiological chemists who are interested in problems of industrial medicine and in the various intoxications to which the human body is exposed.

[1] *Nouveau Traité de Médecine.* Fascicule vi: Intoxications. Publié sous la direction de MM. les Professeurs G. H. Roger, F. Widal et P. J. Tessier. Paris: Masson et Cie. 1922. (Sup. roy. 8vo, pp. 506; 23 figures, 4 coloured plates. Fr. 35.)

PSYCHOPATHOLOGY.

THE volume on *Psycho-analysis, its Theories and Practical Application*,[2] by Dr. A. A. BRILL, one of the leading American exponents of Freud's teaching, has been considerably enlarged since it was first published in 1912. The most important additional matter is contained in a new chapter on paraphrenia. Under this heading Dr. Brill gives an account of a group of mild psychoses in which the subjects, though considered by their friends to be peculiar, eccentric, or crazy, seldom come under the observation of the physician. Such patients tend to be interested in "psychic" matters and thus sometimes come to the psychiatrist to discuss with him their views and experiences. The author finds that these individuals exhibit an attitude similar to that of the more

[2] *Psycho-analysis, its Theories and Practical Application.* By A. A. Brill, Ph.B., M.D. Third edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co. 1922. (Med. 8vo, pp. 463. 21s. net.)

severe cases of dementia praecox, though naturally in a less pronounced form. There is a dulling of affectivity, a restricted capacity for work, some weakness of judgement, and eccentric notions, but with no actual dilapidation of the inner unity of the psychic life as in the graver cases. Such types are deserving of study, particularly because they afford an opportunity of elucidating the points of difference between a mild psychosis and a psychoneurosis. The diagnosis is not always easy, but these mild paraphrenics, in contrast to psychoneurotics, cannot be influenced or moulded, are not impressionable, do not co-operate in treatment, and, as the author says, "a mental sclerosis runs through the whole life." Dr. Brill has had great experience in psycho-analytic therapy, and it is thus of interest to observe that he finds the paraphrenic type inaccessible to mental exploration. The impenetrability of these cases is a feature of diagnostic importance, and most psychiatrists have found them to be almost entirely uninfluenced by any of the usual forms of psychotherapy.

Dr. Brill, like all good Freudians, attaches much significance to the little mistakes in life. Amongst these, as he points out, are to be included misprints and the failure to notice errors in correcting proofs. There are several misprints in this volume, and a rather unfortunate misuse of the word "predisposed" for "presupposed" occurs on the first page of the preface. It would be interesting to know how the author explains this slip. He writes a little crossly of his opponents in the sentence preceding that in which the mistake occurs, and perhaps this may have something to do with it.

The same author has also written another volume, *Fundamental Conceptions of Psycho-analysis*,[3] which is intended for the information of non-medical readers. The material in this book is taken from lectures given at an elementary course in the Department of Pedagogics at the New York University. The book is clearly written, and the author's wide experience of his subject enables him to illustrate the theories he advocates by references to a number of concrete examples which serve to support them.

SANITARY INSPECTION.

THE systematic inspection of his district is one of the most important duties of a sanitary officer in this country, and many of the recommendations made to sanitary authorities result from that inspection. In the United States of America the inspection is given the more high-sounding title of Public Health Surveying, and its great importance is coming to be recognized by the American public health authorities. In *Public Health Surveys*[4] Dr. MURRAY P. HORWOOD, of the Massachusetts Institute of Technology, defines such a survey as "an investigation conducted by a trained corps of workers, in order to determine the exact status of those conditions that may affect the health of a community directly or indirectly." A cursory glance at this volume would stamp it merely as another public health textbook, but it is something much more than that: it indicates in a very practical manner under appropriate headings what defects should be looked for, where they may be expected, and precisely how they may be remedied. Water supplies, drainage and sewage disposal, refuse collection and disposal, milk supplies, food distribution, housing, school sanitation, and tuberculosis are among the subjects specifically dealt with. The chapter on milk supplies is of special interest to public health administrators in this country, for we are constantly hearing of the excellence of the American methods. We cordially agree with the author that a safe milk supply in a community is almost as important as a safe water supply; indeed, we would go farther and say that, at the present day, it is quite as important. He lays great stress on the advantages of pasteurization and goes so far as to say that one of the greatest boons conferred upon mankind was the introduction of this process, an opinion that is not held by a large number of health officers outside America. He is, however, wise enough not to rely entirely on pasteurization, for he is eloquent in advocating well-constructed, clean, well-lighted, and well-ventilated milking sheds, and urges the importance of absolute cleanliness in connexion with every stage of milk production. The system of score cards in vogue in America, though it has never found much favour in this country, is well described, and the various cards in use are reproduced. Illustrations are given of model cowsheds very much on the lines of those recommended by the Board of Agriculture and Fisheries in the Board's leaflet (No. 241) on the construction of cow-houses. Other illustrations depicting insanitary conditions, such as accumulations of manure right up to the walls and doors of cowsheds, testify to the fact that the milk supply of America is not produced throughout that continent as satisfactorily as some persons would have us believe.

Although this work is primarily intended for American public health officers, it contains a great deal of information of value to those of other countries. School medical officers especially should read the chapters on school sanitation and school hygiene. The problem of the drinking cup in schools is very difficult of solution, and one method is illustrated for use in those schools where running water is not available. A large jar with a tap at the bottom is provided, and a few inches below the tap a wide funnel is placed with the outlet emptying into a bucket. When the tap is turned on the water flows into the funnel, out of which the child drinks, as he does out of the more costly fixed "bubbling fountains" which are found in some schools. A foreword from the pen of the late Professor William T. Sedgwick and an introduction by Mr. George C. Whipple, Professor of Sanitary Engineering at the Harvard Engineering School, give an additional interest to this work, the value of which is further increased by the large number of illustrations; there is one on every fourth page.

SIR THOMAS ANDERSON STUART.

IN his biography of *Anderson Stuart, M.D., Physiologist, Teacher, Builder, Organizer, Citizen*,[5] Mr. WILLIAM EPPS, Secretary of the Royal Prince Alfred Hospital, Sydney, with which the late Sir Thomas Peter Anderson Stuart was intimately associated from the year after its opening until his death, gives an authoritative account, based on close personal knowledge of a many-sided and striking character. Anderson Stuart was born in Dumfries in 1856, and after an exceptionally brilliant career at Edinburgh, culminating as demonstrator of physiology under Rutherford, was appointed in 1882 professor of anatomy and physiology in the infant medical school of the University of Sydney, which owes its present highly developed state of efficiency to his labours; this was his life's work, and to accomplish it he to a large extent sacrificed original laboratory research, though he did a certain amount of work in connexion with the functions of the epiglottis, the internal structure of the eye, chromogenic micro-organisms in wool, the *mika* or *kulpi* operation practised by the aborigines (formerly called "Sturt's terrible rite"), and kymoscopes. On his arrival at Sydney in 1883 there was no school or students; in 1914 there were 604 students of medicine. His administrative and organizing ability, in conjunction with his pertinacity of purpose and his shrewd knowledge of men, was invaluable in the building up of the medical school and all that concerned it. His activities extended in wider directions, for he was President of the Board of Health of New South Wales, of the Royal Society of New South Wales, and of the University of Sydney Society for Combating Venereal Disease. This memoir, which contains much autobiographical material, and gives a graphic and sympathetic sketch of a forcible man and his personal traits, is illustrated by photographs and by four caricatures, thus throwing light on the respect felt for their teacher by the younger members of the university for which he did so much.

NOTES ON BOOKS.

IN a small monograph on the operation of submucous resection of the nasal septum[6] Dr. MEDDAUGH DUNNING gives a brief account of the anatomy and physiology of the nose and traces the development of the technique which he now employs for this operation. He advocates especially the use of a curette-elevator of his own design. The book is freely illustrated, but there is little in the text which is original and much which is irrelevant.

[3] *Fundamental Conceptions of Psycho-analysis*. By A. A. Brill, Ph.B., M.D., Lecturer on Psycho-analysis and Abnormal Psychology, New York University. London: George Allen and Unwin, Ltd. 1922. (Demy 8vo, pp. v + 344. 12s. 6d. net.)

[4] *Public Health Surveys, what they are, how to make them, how to use them*. By Murray P. Horwood, M.S., Ph.D. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd. 1921. (Fcap. 8vo, pp. 405; 95 figures, 54 tables. 24s. net.)

[5] *Anderson Stuart, M.D., Physiologist, Teacher, Builder, Organizer, Citizen*. By William Epps, Secretary, Royal Prince Alfred Hospital, Sydney. Sydney: Angus and Robertson, Ltd. 1922. (Pp. xv + 177; 21 illustrations.)

[6] *The Submucous Resection of the Nasal Septum*. By W. Meddaugh Dunning, M.D. New York: Surgery Publishing Co. 1921. (Post 8vo, pp. 97; 25 figures.)

MOTOR NOTES FOR MEDICAL MEN.

BY H. MASSAC BUIST.

HOW TO READ THE SCOTTISH TRIAL RESULTS.

WHILE the Royal Scottish Automobile Club, like the Royal Automobile Club, is unable to create what might be called new fashions in cars, nevertheless by recent enterprise both organizations are helping to pave the way to the production of vehicles that will suit the needs of owner-drivers in particular better than those hitherto available. Thus even in the case of the Manx motor racing for the Tourist Trophy and for the "Fifteen Hundred" Trophy, which is really one of the final phases of experimental work, very valuable progress has been made under three headings, among many others—namely, in the direction of the evolution and use of mixed fuels with power alcohol as an essential ingredient; in the evolution of brakes to all four wheels; and in the demonstration of the fact that the corded type of tyre makes for amazing durability and economy and will presently be available, without undue weight, on the straight-sided principle with light rim. The mixed-fuel proposals will interest medical men in very practical fashion at no distant date, for some of our largest fuel-distributing organizations have already completed plans for engaging in the business on a commercial scale. These mixed fuels are evolved in measure as the liquid-fuel internal-combustion engine is developed.

THE COMING OF MIXED FUELS.

If the standard car trial in Scotland, or the special racing cars run in the Isle of Man, or, more particularly, those which will be raced for the Grand Prix on the Strasbourg circuit in the middle of this month, be examined, it will be found that the greatest progress is being made in the direction of producing more power from smaller engines. This is made possible by the use of compression ratios far higher than those formerly employed. For example, when the war broke out a 5½ to 1 compression ratio was considered almost too high even for aircraft engines; whereas the Vauxhall cars raced in the Isle of Man had compression ratios of about 7 to 1, and several cars that will figure on the Strasbourg circuit will have at least that. One result is that we are getting 90 h.p. out of a 2,000 c.cm. engine, or what we should call approximately a 14-h.p. type Treasury rating. But these powers, which are capable of propelling chassis at extraordinarily high speeds, are being developed with an amazing fuel economy, particularly if we cast our minds back to the days when we were racing with engines of ten times the volume that figured in the "Fifteen Hundred T. T.," the earlier vehicles achieving only 60 per cent. of speed on an easy course and under better weather conditions than obtained in the Isle of Man last month, when the miniature engined vehicles were raced. In other words, a glance at the story of racing reveals plainly that we have been reducing car weight, increasing reliability, and reducing the engine space in relation to the chassis space, as well as the fuel and tyre consumption in relation to the work done. Special bi-fuel carburettors are ready for standardization; and the motorist will have the opportunity of choosing either to develop greater horse-power or to save 25 per cent. of his fuel bill and develop as much power as at present, or to combine parts of the two gains.

But at present, though the straight-sided tyres certainly make for economy under the most severe test of all—namely, racing, wherein the wheels have to be skidded round the corners and the side strains are therefore at the maximum, nevertheless the weight of the detachable rims is at present an objection to their immediate universal use. Information of which I am possessed, however, leaves me no manner of doubt that this particular weight problem will be solved at no distant date. Further, the risk of the detachable rim rusting *in situ* is likely to be eliminated by the materials that will be employed. Already it is possible with the corded tyre on the beaded-rim principle to obtain an average of two and a half times the tyre mileage that was possible with canvas tread tyres. When it shall become possible to use a straight-sided tyre without extra weight and without any possibility of the rim rusting, tyre mileage will be increased still more. Thus already we have reached the point at which tyre costs are lower than they were before the war if we put them on the only possible scientific basis—namely, cost per car mile.

POINTS ABOUT SMALL CARS.

In the recent trial of standardized small cars by the Royal Scottish Automobile Club, the awards in connexion with which were published in these columns last week, it is interesting to note that, though under the heading of tyre trouble each competitor was allowed six'y minutes during the whole week in the course of 1,020 miles running without being penalized, only one competitor of the forty-four who started exceeded that allowance, and that by a margin of three minutes only. From this the conclusion might be drawn that these cars are adequately tyred as a class. But I think it would be an erroneous one. At least, the impression I gathered myself when watching some of the hill-climbing work in the Highlands was that there is a tendency by the trade to under-tyre small cars as a class. Curiously, in the other extreme there is a tendency in some of the middle-class cars to over-tyre. One useful result of the Scottish trials will, I think, be to cause some of the leading makers of small cars to fit larger tyres next year. But as long as we use the beaded-edge type of tyre, which is likely to be with us for another season or two in the majority of cases, there is no question that it is necessary to have proportionately somewhat larger tyres, both for comfort in riding and as to the air space, to ensure the necessary strength. Vast improvements have been made in the corded tyre, and I gained another impression in Scotland concerning tyres for small cars. I am quite sure some of the competitors strove to save their springs in what was certainly a punishing test—many of the road surfaces were of an extremely irregular character—at the expense of their pneumatics by running them somewhat slacker than the tyre makers specify. This is a foolish policy and is bound to lead to trouble. No car owner should ever slacken his tyres with a view to saving his springs; it is sure to result in nipping, ripping, or otherwise destroying the tubes, while the wrong sort of play occurs to the walls, particularly when corners are taken; therefore the treads get worn out untimely.

THIS YEAR—AND NEXT.

In face of the very great proportion of hill climbing that had to be done in the course of the tour and of the fact that some of the ascents over which the competitors were not timed were of more severe gradient than those over which they were it means a deal for these little cars to average 20 miles an hour from point to point. Indeed, I have in mind one particular hill climb, not in the timed area, along the descent following which we were riding in a big 6-cylinder car at from 10 to 12 miles an hour only because the back axle was crashing against the side members of the car frame every now and again the moment we went any faster, so irregular was the surface of the mountain road. The driver of this non-competing, lightly laden car tried to soothe our anxiety when we hinted that we might be getting home somewhat late by saying that it was impossible that the small cars could go as fast as we over that route. I pointed out, however, that according to their showing they would keep up the schedule, though, admittedly, on some of the steeper ascents they could not average 20 miles an hour on the climb; therefore their only chance of keeping to schedule was to go over the ground we were traversing at 10 to 12 miles an hour at 25 or 35 miles an hour. That is precisely what they did, it being quite remarkable how closely these little vehicles kept to schedule. I saw them come in at the end of that day's run, as on other nights. Quite 80 per cent. of the competitors came in within a minute of their schedule time on a day's run of anything from 160 to 180 miles. The tests showed clearly that these little vehicles can be built to stand rattling over bad roads. Further, the club's method of examining the cars that appeared to do best in the Trials at the end of the test, to make sure that they really were in good condition before granting awards, is a wise move, and makes such awards of additional value.

Some would urge that the trials should be extended next year to embrace vehicles with engines up to 2,000 c.cm. volume, instead of setting the limit at 1,600 c.cm. as this year, but that would be a mistake. There is no particular need to try vehicles as large as 2,000 c.cm. engine volume in tests of this sort next year. There will be forthcoming then quite as many 1,600 c.cm. vehicles as even the Royal Scottish Automobile Club itself could handle because many members of the British, and European, industry who abstained this year have suddenly recognized the value of what is the most scientifically conducted and all-round test of standard small cars ever attempted; moreover, the relatively few awards given

increased their value. Next year also the American industry will have fully entered on the light car business, and as the Scottish classification of standard vehicles is on a price basis the Americans, with their low costs, would have every advantage in competing, and will assuredly do so in considerable numbers. We should therefore rather reduce the engine volume from 1,600 to 1,500 c.cm. than put it up from 1,600 to 2,000 c.cm. for the 1923 Scottish standard small car trial, in which German products are sure to be represented.

ASPECTS OF FUEL CONSUMPTION.

The report on the trial published by the Royal Scottish Automobile Club occupies 39 foolscap pages, and is the most valuable document any intending purchaser of a small car can study. The figures under all heads are of extreme interest, including brake tests, acceleration, six different hill climbs, and fuel consumption tests. The last-named are particularly interesting when fresh forms of fuel and carburettors suitable for their use are about to be developed. The leading carburettor firms are fully prepared for the coming change, which will give us still further economy to an extent aggregating some 25 per cent. on present performances. Yet some of the present-day performances in the small car class, as now certified by the Scottish trial figures, are extremely economical.

It does not follow, however, that cars which are the most efficient as standardized in relation to one another, or to their classes, will necessarily make the greatest appeal under this head to the average user. It depends entirely on what the vehicle does. For example, if we take the order of merit in all classes for the entire competition, we find that the first place went, as was mentioned last week, to a 11.4-h.p. 4-seater Citroën car. It happened to be one of the heaviest cars in the trial, weighing 2,502 lb, and did 41.112 ton miles to the gallon; but because of its weight the actual road miles that car did to the gallon of fuel was 36.802. To the non-technical, therefore, there were plenty of cars that ran cheaper than this. For example, one 10-h.p. 2-seater G.N., which came out 19 in the order of merit of fuel consumption, and weighed 1,394 lb. when competing, did 30.342 ton miles to the gallon only, but travelled 48.723 road miles to the gallon. The motor owner has to pay the petrol bill for his vehicle in terms of road miles to the gallon; consequently one wants to consider the statistics under their two headings. Again, sometimes there are unexpected variations. Thus, a second 11.4-h.p. Citroën car, which weighed somewhat more than the machine that came out best under fuel consumption, scaling 2,527 lb., did 37.485 ton miles to the gallon and 33.243 road miles to the gallon as a 4-seater.

TON MILES *v.* ROAD MILES.

I find that a 2-seater 10-h.p. G.N. which competed in the lowest class for cars costing not more than £250, did 35.123 ton miles to the gallon, which, however, in the case of this car, which scales 1,442 lb., worked out at 54.59 road miles to the gallon. The two 9-h.p. air-cooled Stoneleigh cars, which also competed in this class, and which did best on the hills alike on time and on formula and in many other respects came out first and second in their class, were notable for carrying three passengers throughout the trial, and weighed 1,691 lb. and 1,677 lb. respectively, did 35.990 and 38.582 road miles to the gallon respectively. Among the 2-cylinder water-cooled two-seater cars one 7-h.p. Wolseley weighed 1,647 lb., did 22.527 ton miles to the gallon, and did 30.623 road miles to the gallon; while a sister machine weighed 1,579 lb., did 21.71 ton miles to the gallon and 30.796 road miles to the gallon. The 10-h.p. 4-cylinder water-cooled Swift weighed 1,786 lb., did 35.178 ton miles to the gallon and 44.113 road miles to the gallon; but it did not distinguish itself on the timed hill climbs. One of the two-seater 8-h.p. 4-cylinder overhead valve engined Talbots weighed 1,778 lb., did 31.267 ton miles to the gallon and 39.425 road miles to the gallon, doing notably well on hills, as did the sister machine, which weighed 1,745 lb., did 31.524 ton miles to the gallon and 40.501 road miles to the gallon. By contrast one 10-h.p. 2-cylinder air-cooled B.S.A., which, like the sister machine, carried two persons throughout the trial, weighed 1,795 lb., did 30.565 ton miles to the gallon and 38.135 road miles to the gallon, but did not distinguish itself particularly on the timed hills. Nor did the sister machine, which weighed 1,817 lb., did 28.206 ton miles to the gallon and 34.767 road miles to the gallon. The 11.9-h.p. Star cars did notably well on the hills, and in other respects, one, we ghing 2,394 lb., doing 37.120 ton miles to the gallon and 34.727 road miles to the gallon; while the sister machine weighed 2,425 lb., did 34.492 ton miles to the gallon and 31.879 road miles to the gallon. The 11.9-h.p. A.C. weighed 1,953 lb., did 24.156 ton miles to the gallon and 27.712 road miles to the gallon, being thirtieth out of forty-four competitors in order of merit in fuel consumption in the whole trial, and last but one of its class in order of merit on hill climbs and speed tests on formula. One of the 12 h.p. Talbot-Darracqs, both of which carried four men throughout the trial, weighed 2,934 lb., did 35.932 ton miles to the gallon and 27.432 road miles to the gallon; and the sister machine weighed 3,018 lb., did 33.205 ton miles to the gallon and 24.655 road miles to the gallon.

BRAKES, ACCELERATION, AND HILL CLIMBING.

The order of merit in regard to the brake test showed that the following came out best in their respective classes:

9-h.p. Stoneleigh, 7-h.p. Wolseley, 10-h.p. Swift, 11.9-h.p. Star, and 12-h.p. Talbot-Darracq. The order of merit in each class in the acceleration test showed the following cars did best: 9-h.p. Stoneleigh, 8-h.p. Amilcar, 8-h.p. Talbot, 11.9-h.p. Star, 12-h.p. Talbot-Darracq. The hill-climbing and speed tests marks on formula showed the following cars to be the best of their respective classes: 9-h.p. Stoneleigh, 8-10-h.p. Rob Roy, 8-h.p. Talbot, 11.9-h.p. Star, and 11-h.p. Riley.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

THE third annual meeting of the Society for the Prevention of Venereal Disease was held at the house of the Royal Society of Medicine on June 29th.

Lord WILLOUGHBY DE BROKE, who presided, said that the general situation was the same as when he addressed a similar meeting a year ago. The Ministry of Health had not found itself able to apply the teachings of science to the prevention of venereal disease. There were, however, some hopeful indications that the National Council for Combating Venereal Diseases might presently co-operate with the Society. He quoted from the eight-point manifesto of the Council, published in 1921:

"If an individual has incurred or has reason to think that he or she has incurred risk of infection, it is his or her bounden duty to cleanse himself or herself thoroughly and immediately."

This appeared to be a complete acceptance of the policy of immediate self-disinfection. Moreover, in the *Venereal Clinic*, edited by Dr. E. R. T. Clarkson, formerly a member of the National Council, it was stated that the National Council "have fundamentally moved from their original position to one which is practically shared by the Society for the Prevention of Venereal Disease." Even more telling evidence than this was available. A work by Sir Leslie Mackenzie, which had received the endorsement of the National Council, contained the following:

"It is absurd to say that there is any danger in teaching every person capable of being taught that the venereal diseases are each of them due to a definitely known germ; that, so long as the germ lies on the surface, it can be destroyed with a mild disinfectant or even mechanically removed by soap and water without much trouble; but that when one of those germs enters the channels of the body and infects the lymphatic glands or the blood, the destruction of the germ, which is another name for the cure of the disease, becomes, in at least two of these diseases, a matter of extraordinary difficulty and demands high technical knowledge and skill."

Lately (Lord Willoughby continued) there had been some decrease in the incidence of venereal disease in this country; the decrease synchronized with the public controversy on immediate self-disinfection, and the consequent publication of a great deal of knowledge which had hitherto been concealed from the public. In France, according to the report of the French commission of inquiry, one-tenth of the population were suffering from syphilis, the deaths due directly or indirectly to this cause numbered 140,000 a year, and the cost of syphilis alone was several milliards of francs. He rejoiced in the setting up of Lord Trevethin's Committee, and in this connexion he referred to a letter by Lord Dawson which had appeared in the press, and which urged that—

"Until some conclusion supported by a considerable preponderance of opinion has been reached it cannot be reasonably expected that the Ministry of Health should do otherwise than maintain impartiality and give a fair field and no favour to the two schools of thought and action. As a logical consequence grants of money should be made either to both or neither of the corresponding societies."

Lord Willoughby thereupon proposed a resolution that the Ministry of Health should again be approached with a request for financial support to assist the society in carrying out its policy.

This resolution was opposed by Mr. HAROLD COX, who thought it would be more polite to await the decision of the Committee of Inquiry, and he was supported by Sir BRYAN DONKIN and others. Eventually it was agreed unanimously that as soon as the Committee of Inquiry had reached a decision the Ministry of Health should be approached on the subject.

Mr. WANSEY BAYLY, honorary secretary, gave an account

of the various activities of the society during the year, chiefly meetings and correspondence, and mentioned that Pembrokeshire had been added to the local authorities, now numbering twenty-one, which had adopted the society's policy. Sir W. ARBUTHNOT LANE, the treasurer, said that subscriptions had fallen below last year's level, but the work had been done at less cost.

Dr. MEARNS FRASER said that Portsmouth, of which he was medical officer of health, was the first large town to adopt officially the policy of instructing the public in methods of self-disinfection, which it did by means of leaflets and notices in public places. The result was reflected in the numbers attending the treatment centre. The centre was opened in February, 1917, and in that year 352 individuals applied for treatment. In 1918 the numbers applying were increased by 91 per cent. above this figure, and in 1919 by 62 per cent. above the figure for 1918. In 1920, in the latter part of which year the policy of instruction in self-disinfection was adopted, the increase upon the previous year's figure was only 13 per cent., and in 1921 there was no increase at all, but a decrease of 12 per cent. upon the figure for 1920. In the first five months of 1922 there had been a decrease of 23 per cent. as compared with the corresponding months of 1921. The figures were too small and the period too short to permit of absolute deductions, but he thought they had some significance.

The annual report was adopted unanimously, and various committees were reappointed.

REVISION OF THE INTERNATIONAL SANITARY CONVENTION OF 1912.

THE International Sanitary Convention signed at Paris on January 17th, 1912, marked an important stage in the gradual progress that is being made towards the adoption by all civilized countries of a national and uniform system of preventing the maritime spread of dangerous epidemic diseases. The official delegates of forty countries signed this Convention, but difficulties and delays arose in its formal ratification by the Governments concerned, and down to September, 1919, only twenty Governments had performed this act, some of them with, and some without, certain reservations.

In the meantime it had become evident that early revision of the Convention would be necessary in view of new political conditions and new developments of science. Plague, cholera, and yellow fever were the only diseases dealt with in it, and the additions to epidemiological knowledge since 1911, when it was prepared, were such that even as regards those diseases some of the technical provisions were out of date and did not conform with modern views and practice. The Office International d'Hygiène Publique was at that time, and still remains, the body primarily concerned with the preparation and formulation of international health agreements, and its committee, at its session in October, 1919, unanimously accepted the necessity and importance of an early revision. At the next session, in April, 1920, it was arranged that the delegates of the countries represented should prepare detailed proposals for amendments or alterations, and that these would form the basis of the preliminary studies necessary in order that a formal international conference might afterwards be convened to decide on the provisions of a revised Convention. Expert examination of the modifications proposed was begun at the October session of the same year and was continued at each subsequent session. The task of revision was greatly facilitated by working on the lines of a memorandum which was the outcome of combined action taken during 1920 by the delegates of all the British countries concerned. The aim was to produce an international document which should on the one hand provide a more efficient means of preventing the spread of epidemic diseases, and on the other hand keep fully in view the interests of commerce and traffic, by removing arbitrary "quarantine" rules and customs which are not justified by present knowledge. Most of the proposals in this memorandum were accepted and acted upon in the revision undertaken by the Committee, and the position at the end of last year was that the preparation of a revised draft of Articles 1 to 54 of the Convention, comprising Part I (general provisions), was completed. It is understood that the principal changes proposed include:

1. A better system of prompt international notification of the occurrence and progress of the epidemic diseases dealt with.
2. The addition of provisions relating to typhus fever, small-pox, and certain other diseases.
3. A rearrangement by which the action to be taken is stated separately for each disease in accordance with up-to-date knowledge of its natural history and epidemiology.

With regard to Parts II to IV (special provisions for Eastern and Far Eastern countries, pilgrimages, the Sanitary Board of Egypt, etc.), various circumstances made it impracticable to consider their revision until the technicians who had charge of the preparation of the new draft could acquire local knowledge of present conditions in the countries concerned. The Office International d'Hygiène Publique, owing to the limited funds at its disposal, was not in a position to appoint a Commission for this purpose, and the project only became feasible when the Health Committee of the League of Nations decided at a session held in Paris in October, 1921, to send a small Commission to collect information as to the risks of spread of epidemics from the Black Sea ports through the Straits, and from countries in the Near and Middle East through the Suez Canal. In consultation with the President of the International Office it was arranged that the reference to this Commission should include a study of matters bearing on the revision of Parts II to IV of the Convention and that its personnel should include members of the permanent committee of the Office who were specially occupied with that subject. The President (Dr. Th. Madsen) and Vice-President (Sir George Buchanan) of the Health Committee of the League of Nations were among the members appointed, and as technical adviser Dr. Granville, President of the Sanitary Maritime and Quarantine Board of Egypt, accompanied the Commission throughout its inquiry, which began at Alexandria on February 20th and ended at Constantinople on March 27th.

The League of Nations has just issued this Commission's report,* which describes from the point of view of international interests the measures necessary to prevent the spread of epidemic disease in regard to:

1. The Suez Canal and ports whose sanitary service falls under the Sanitary and Quarantine Board of Egypt.
2. The Red Sea (the Mecca pilgrimage and the Hedjaz railway).
3. The Mediterranean littoral of Asia Minor.
4. Constantinople and the Straits.

The report shows clearly the difficulties and delays arising from the post-war multiplication of different authorities whose present practice, not being governed by international or local agreement, causes vexatious and costly interference with commerce, but, in the absence of proper sanitary stations and equipment, is of little or no value in preventing the introduction and spread of disease. It relates that at nine successive ports of call during a voyage of nine days from Beyrout to Constantinople the ship was medically inspected under different regulations, and without reference, other than an examination of the bill of health, to the previous inspections. It describes new circumstances in Arabia which show clearly the need for comprehensive and co-ordinated measures of sanitary control if the annual pilgrimage to the sacred cities of the Hedjaz is not to continue to cause, from time to time, widespread prevalence of cholera and other epidemic diseases. It emphasizes the necessity of effective measures at the northern entrance to the Bosphorus, and notes that the present sanitary station at that entrance (Kavak) is inadequate, dilapidated, and otherwise objectionable from its restricted area and bad landing facilities. Suggestions are given for remedying in detail these and other local defects, with regard, in each instance, to the requirements of the International Sanitary Convention of 1912. An annexe contains the text of a draft revision of Parts II and III of that Convention.

This concludes the preliminary study which was required before all the civilized countries of the world could be approached with a view to holding a formal international conference for the revision of the 1912 Convention, and it is greatly to be hoped that the established procedure for this object will now be carried through without delay.

* League of Nations C.342 M.193, 1922, III, "Report of Commission to enquire into international arrangements regarding epidemic disease prevention in certain areas of the Near East (basin of the Eastern Mediterranean and Black Sea) and in connection with the Mecca pilgrimage."

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THE PROPOSED INCIPIENT INSANITY BILL.

IN our Parliamentary Notes last week (p. 24) it was stated that the Minister of Health had under consideration the draft of a bill to enable persons suffering from incipient mental disease to be treated in public or private mental asylums without certification. This proposal follows upon the inclusion of a clause dealing with this subject in Dr. Addison's ill-fated Ministry of Health (Miscellaneous Provisions) Bill, which was introduced into Parliament in the autumn of 1920. With the withdrawal of this bill all the proposals in it had to be abandoned, but the importance of the treatment of incipient insanity is a subject which has grown rather than diminished in the interval. At the Annual Meeting of the British Medical Association at Newcastle-upon-Tyne in July, 1921, an interesting discussion took place upon the subject in the Section of Neurology and Psychiatry. It was introduced by Professor G. M. Robertson of Edinburgh, who contrasted the English with the Scottish law; in the former, if an insane person be detained and restrained he must be certified, but in Scotland a "lunatic" may be detained and treated under certain conditions without being certified. He pointed out that private patients were entering such mental hospitals as Craig House in greater numbers voluntarily than under certificate, and that they came at an earlier and more recoverable stage. He suggested that if the lunacy laws could be so amended that patients of small means suffering from curable mental disorders could also enter mental hospitals and receive early treatment without being certified lunatics, as patients enter general hospitals, and as the majority of private patients in Scotland paying the higher rates of board now did, then a new era would be introduced. He did not suggest that the Scottish law upon the subject was ideal; the Act relating to admission of patients to mental hospitals in Scotland was sixty-five years old, and in Scotland, as in England, the Lunacy Acts had outgrown their usefulness, especially to the poorer classes of the community.

The discussion at last year's Annual Meeting was but the latest chapter in the long history of the close interest that the British Medical Association has taken in the treatment of incipient insanity. As occasion has offered the Association has either urged the need of legislation or has made representations to the Government of the day in respect of bills which have been introduced, and as the result the Association has had the satisfaction of seeing many of its proposals embodied in the law of the country. For example, several amendments were introduced into the Lunacy Amendment Act of 1890 as the direct outcome of representations made by the Association in response to the request of the Government. A committee of the Association in the years 1897–98, with the valuable co-operation of the Medico-Psychological Association, collated evidence as to the Scottish experience, and laid it before the Lord Chancellor (Lord Halsbury) with a joint recommendation from the two Associations that the English law should be modified in the same way.

The introduction into the Parliament of 1905 of a Lunacy Acts Amendment Bill indicated acceptance by public authorities of the principles for which the medical profession had long been striving. This bill incorporated, with other detailed improvement of the lunacy law, the methods of the Scottish Act for the treatment of cases of unconfirmed mental disease. Although, owing to the exigencies of public business, this and also Sir John Batty Tuke's bill for the early treatment of mental disease were not passed, their introduction showed that the time was opportune for the definite formulation of the views of the medical profession on the subject, and a small subcommittee was therefore appointed by the Medico-Political Committee of the Association in 1905 to consider amendment of the law concerning the treatment and detention of persons suffering from incipient insanity. In 1906 the Annual Representative Meeting in London considered and approved two special reports of the Medico-Political Committee dealing with amendments of the Lunacy Acts, and more particularly with the provision for unconfirmed cases of mental disease. In 1907 the Annual Representative Meeting at Exeter considered and approved a statement of evidence which was submitted on behalf of the Association to the Royal Commission on the Care and Control of the Feeble-minded. The report of the Royal Commission was issued in 1908, and in August, 1909, the Association was represented on a deputation to the Home Secretary to urge the necessity of early legislation to give effect to this report.

In 1911, following a communication concerning the care and control of the feeble-minded from the Manchester and Salford Sanitary Association, requesting the support of the British Medical Association in making representations to the Government as to certain methods of dealing with this matter, the Council of the Association gave instructions for a special report on the subject to be drawn up and submitted to the Representative Body. This report summarized the work the British Medical Association had already done during the previous ten years in regard to the care of the feeble-minded, and reviewed the representations which it had also made to the Government, with a statement of the reforms in the law which the Association advocated as a result of its experience.

The Medico-Political Committee continued to give close attention to the subject, and in 1912 the Association submitted a memorandum to the Home Secretary on its policy with regard to the amendment of the lunacy laws on the care of the feeble-minded, pointing out particularly its views on the new classes of patients which ought to be brought under the supervision of the Lunacy Commissioners, the composition of the Lunacy Commission, the need for one central authority, and the need for the treatment of unconfirmed mental disease. In the reply which the Home Secretary sent to the Association he stated that he had under consideration the details of a bill to provide for the care and control of the feeble-minded. Subsequently this bill was introduced into Parliament, in the session of 1912–13, and in general met with the approval of the Association. Though, owing to the demands on Government time, the bill was withdrawn, it was reintroduced in March, 1913, and subsequently became law under the title of the Mental Deficiency Act. The scope of this Act was limited, and in 1914 the Association appointed certain members to represent it in a discussion with representatives of the Medico-Legal Society upon the question of the treatment of incipient insanity without certification. A Voluntary Mental Treatment Bill was introduced into the House of Lords in July, 1914, and the Council of the Association expressed approval of this bill, which was intended to secure that persons whose mental condition was uncertain, but who required medical treatment to prevent their becoming lunatics, might receive such treatment in a manner at present impracticable owing to

the state of the law, which assumed that a person either was or was not insane, and took no notice of early symptoms of insanity. This bill, being an unofficial bill, had no binding effect upon anyone, and the only positive achievement of its introduction was that through it public information was given as to the legislation that was proposed in regard to the treatment of incipient insanity.

Another bill was introduced into the House of Commons in 1915 by Mr. Cecil Harmsworth, then Parliamentary Under-Secretary to the Home Office; its purpose was to facilitate the early treatment of mental disorder of recent origin resulting from wounds, shock, disease, stress, exhaustion, or any other cause. The object of the bill was to secure the proper treatment of such cases by making the law less rigid, and it was especially intended to apply to cases of soldiers and ex-soldiers whose unstable mental condition had arisen from war causes. In consequence, however, of opposition it was found impossible to proceed with the bill.

Although the details of the legislation now proposed have not yet been made public, it may be assumed that in general they will follow the provisions of the various bills dealing with incipient insanity that have come before Parliament during the past fifteen or twenty years, but have not been proceeded with. It is probable, therefore, that they will refer to patients in private as well as public mental hospitals approved by the Board of Control, and not only to patients who are willing to enter an institution, but also to those suffering from puerperal mental disorder and similar conditions where the patient has no clear power of volition. The procedure suggested is, we understand, that a declaration shall be made by two doctors, one of them approved by the Board of Control, to the effect that the patient is suffering from mental disorder, and is likely to benefit from temporary treatment in an institution, so that it is expedient for him to be received into an institution for this purpose. Such a declaration would hold good for a limited period—probably six months—at the end of which time another declaration might, under suitable safeguards, be made. The patient throughout would have the right to leave the institution, subject to giving forty-eight hours' notice. The measure, it is hoped, may help the public to look upon all mental institutions as hospitals offering increasing possibilities for the cure or arrest of mental disorders, and not as asylums in which persons are segregated for life. It has been difficult to convince the Legislature that the powers of the Board of Control may be usefully extended from "certified" to "uncertified" persons, in spite of the evidence from Scottish experience. Medical opinion is, however, unanimous that the present laws on the subject of insanity are in urgent need of reform in order that persons, particularly in the early stages of insanity, may reap the benefit of modern advances in the science of psychiatry, and this, it is to be hoped, may be gained from the new bill.

THE CASE OF THE SENIOR SURGEON COMMANDER.

NOT for the first time, we have to call attention to the hard case of certain medical officers of the Royal Navy. For more than two years this grievance has been before the Council and the Naval and Military Committee of the British Medical Association, and many efforts have been made to induce the Admiralty to redress it, but without avail. It now becomes our duty to set out the story and point the moral. The facts are briefly as follows:

In January, 1920, as a consequence of the report of the Jerram-Halsey Committee, new regulations for retirement came into force in the Royal Navy. It was at once seen that a great injustice had been done to a considerable number of surgeon commanders who were nearing or who had passed the new retiring age of 50. The grievance arose under two heads—age of retirement and rate of pension. Under the new regulations these medical officers were compelled to leave the service from one to five years earlier than would have happened under the original terms of their appointment. The effect of this was to penalize the senior surgeon commander in two ways. In the first place he was deprived of several years of service at a higher rate of pay, and in the second place his chances of promotion to higher rank—and therefore of increased pay and pension—were correspondingly diminished. A special hardship was inflicted on those officers who, when making provision for old age, had taken out endowment policies to mature at the normal age of retirement; they found themselves saddled with heavy insurance premiums, which had to be met out of a halved income. Again, the Jerram-Halsey Committee had recommended increases of retired pay for all branches. Now, up to that time it had been recognized, in fixing rates of pay and pension, that the medical officer, with his long professional education at his own expense, was entitled to substantially better remuneration than the executive and other officers who obtained their special training wholly in the Service. But whereas under the new regulations the officers of other branches got increases of pension varying from 26 to 100 per cent., the surgeon commanders received only 10 per cent. increase.

Thus these medical officers, who had entered the Service on the understanding that they would be allowed to serve until the age of 55, were compulsorily retired at 50, and their maximum pension was fixed at £600 a year, representing an increase of but 10 per cent. on the former retired pay of their rank. Here it must be noted that 20 per cent. of the new pension for all officers was stated to be in respect of the increased cost of living, and the pension was accordingly liable to a reduction of 20 per cent. should the cost of living fall to the pre-war level. It followed that if this provision were carried out to the full the surgeon commander might in the long run find himself with a pension lower than he would have drawn had the increase never been granted. It has taken more than two years to obtain an assurance from the Admiralty that in no case shall the retired pay of a surgeon commander who was on the list on July 1st, 1919, be reduced below the old maximum of £547 10s.

The whole grievance of the senior surgeon commander was fully set out in a communication made by the British Medical Association to the Admiralty at the end of 1919, when a request was made that a deputation might place the views of the Association before their Lordships. The Admiralty's reply contained much argumentative matter but no hope of redress, and the deputation was refused. The grievance was admitted, but with the cold remark that legislation for cases of individual hardship was not practicable. Now the Association's case from the first has been that the better pay of those remaining in the Service is no justification for ill-treating the officers who are removed before their time; and that this is not a matter affecting two or three individuals alone. The new regulations have been unjust to some eighty or more surgeon commanders who were or who are approaching the new age of retirement.

The Admiralty's answer was considered so unsatisfactory that in March, 1920, a further letter was sent, asking once more that a deputation should be received, but the Admiralty, in its reply, repeated its preference for written communications. A year later the Association wrote again, insisting that a distinct injustice seemed

to have been inflicted, and giving details in support of its case. This letter was sent direct to the First Lord of the Admiralty. In his reply Lord Lee said that he fully appreciated the very small extent to which the pension of these particular officers had been raised, and that he realized that even this small increase was reduced by the loss of pay which some of them had no doubt suffered as the result of compulsory earlier retirement; but the Board, he said, had to regard the new scheme as a whole, and could not modify it to meet the needs of a particular group without giving rise to similar claims from others. Efforts were next made to enlist the sympathies of members of Parliament, but as nothing came of this a further letter was sent to the Admiralty on February 24th, 1922, expressing the considered view that the treatment of these medical officers amounted to a breach of contract which, in the case of a private firm, would have led to the institution of legal proceedings. The Admiralty was now warned that if the question could not be settled satisfactorily the Association would feel obliged to place the facts before the profession, and to advise young medical men that if they entered the Royal Naval Medical Service they must do so in future with the knowledge that any agreement made with them by the Admiralty might be broken. The answer to this was that the Admiralty could not depart from its original decision. In the meanwhile a scheme for reductions in other branches of the Service had been issued, and this included provision for compensating officers who agreed to retire voluntarily before a certain date. This gave occasion for one more effort towards a just settlement, and the Council of the Association wrote asking that the senior surgeon commanders should be dealt with on similar lines, but again the Admiralty declined. Thereupon the Council at its last meeting resolved to make a final protest and to repeat in more emphatic terms the warning already given.

The matter is one of elementary justice. The complacent bureaucrats have refused to give way, heedless of the effect of their attitude upon the future of the Service for which they are responsible. It is the considered opinion of the British Medical Association that the Admiralty has inflicted a serious injustice upon senior surgeon commanders. The Lords of the Admiralty, it seems, are unmoved by words addressed to them. The Association must therefore now address itself to those from amongst whom the recruits for the Naval Medical Service are drawn. In the light of what has now happened its advice to medical students and young practitioners is to consider seriously the disadvantages to which they are liable if they place their careers in the hands of the Admiralty. This warning will be repeated in the annual Educational Number of the BRITISH MEDICAL JOURNAL, and elsewhere as occasion arises.

R.A.M.C. WAR MEMORIAL: UNVEILING CEREMONY AT THE ABBEY.

WE announced more than a year ago that the fund to establish a memorial to the officers and men of the Royal Army Medical Corps who lost their lives in the war amounted to nearly £19,500. Of this sum £1,500 was earmarked by the donors for the benefit of the families and dependants of the fallen. It was decided that the amount available for the purposes of the memorial itself should be used in three ways: to erect in Westminster Abbey a tablet commemorating the officers and men of the R.A.M.C., Regular, Territorial, and Temporary, who fell or died in the war; to inscribe their names in a "Golden Book" placed in the Chapter House of the Abbey; and to contribute the sum of £10,000 to the fund for the restoration of the Abbey. This project commended itself to all concerned, and its execution was entrusted to a committee consisting of the Director-General Army Medical Service (Chairman), Sir Norman Moore, Bt., Major-General Sir W. G. Macpherson, Sir Launcelotte Gubbins, and Staff-Sergeant Walton, with Colonel C. R. Tyrrell and Major E. B. Waggett as joint secretaries. The main part of the work has now been completed, and on Thursday next, July 13th, at noon, the Duke of Connaught, Colonel-in-Chief of the Corps, will unveil the memorial tablet in the nave of the Abbey. His Royal Highness will then present to the Dean and Chapter for the purposes of the Abbey Restoration Fund the sum of £10,000 in fulfilment of the third part of the scheme. Music will be provided by the Abbey choir and the band of the Welsh Guards. The memorial tablet is of marble, the work of Mr. Wilcoxson of the Royal School of Art, South Kensington; the inscription makes reference to the "Golden Book." The tablet is on the north side of the nave, near the west door and on a level with the foot of the Unknown Warrior's grave. The preparation of the "Golden Book" is in the hands of Mr. Graily Hewitt. Service uniform, academic robes, or morning dress will be worn at the unveiling ceremony. Subscribers to the fund desiring seats should apply to the Royal Army Medical Corps Memorial Fund, Room 314, War Office, London, S.W.1.

THE FUND FOR RUSSIAN DOCTORS.

WE reproduced last week (p. 26) the appeal on behalf of starving medical men and their families in Russia addressed to all members in Great Britain and Ireland by the four officers of the British Medical Association. The Council on June 14th had unanimously resolved that this appeal should be made and that every member be asked to send a subscription of 5s. It was felt that the quickest and most certain way of obtaining subscriptions would be by direct appeal from the head office to each member and that the limitation to a small sum would go far to secure a prompt and widespread response. A leading article commending this appeal to the British medical profession was printed at page 19. The Association received a list of doctors and families of deceased doctors in Russia to whom food parcels must be sent without delay if they are to be saved from death by starvation, and this list has been taken to the American Relief Administration in London, together with the first instalment of the money already received. The American Administration makes itself responsible for the delivery of a food parcel to each of the sixty-five persons named in the list, and will get a receipt from them. It promises further that all moneys subscribed through the British Medical Association will be used for the relief of doctors or the families of doctors who are in urgent need of food. Nine subscriptions of 5s. each will more than cover the cost of one parcel, including all charges. Contributions should be addressed to the Financial Secretary of the Association, 429, Strand, W.C.2, who will send a receipt. It will not be possible to acknowlege all the names of subscribers in our columns, but the amount of money collected will be announced from time to time. The total sum received up to July 3rd in response to this appeal was £685. Many members have sent sums in excess of the 5s. suggested by the Council, and in view of the plight of the Russian medical profession and the urgent need of relief for those of its members who are threatened with starvation the Financial Secretary has not hesitated to accept these generous gifts. A large number of other members have inquired whether more money will be needed, and the Financial Secretary, while unable to reply personally to each, asks us to say that further sums would be gratefully received. One medical man in sending his cheque encloses a letter for publication, giving first-hand information of the sufferings of our Russian colleagues; we print this at page 67, and have respected the writer's preference for anonymity. We may add here that the American Relief Administration has informed the Medical Secretary that next to the necessity of the Russian doctors for food is their need

for medical supplies; it hopes shortly to undertake the sending of medical supplies for some 100,000,000 people and 175,000 hospital beds.

VENOMOUS FISHES.

DR. H. MUIR EVANS of Lowestoft, who has contributed several papers on the subject to our columns, brought the results of his investigations of the defensive spines of fishes, living and fossil, before the Royal Society at its meeting on June 15th. The existence of a poison gland in connexion with the serrated spine on the tail of the sting ray has been a matter of dispute since the days of Aristotle. It has usually been held that the toxic effects of a wound by this spine were due to the poisonous property of the mucus, and that there was no special poison gland. Sections of the spine showing the cellular structures of the two lateral grooves which lie on either side of the median ridge facing the whip-like tail are difficult to obtain. But complete sections show that the grooves are occupied in their deepest portion by alveolar connective tissue provided with blood vessels and lymph channels, and separated from the more superficial mass of special epithelial tissue by a pigmented capillary meshwork. This epithelial tissue contains columns of cells in an active state, the secretion of which is discharged towards the lateral dentate margin. A study of the dorsal fin spine of the spiny dog-fish, Acanthias, reveals a groove containing a glandular structure which discharges secretion through a median longitudinal pit. Further investigation discloses the presence of a more complex gland on the posterior aspect of the dorsal fin spines of the Port Jackson shark, Cestracion. There is some evidence, also, of a special glandular structure near the base of the lateral teeth of *Chimaera monstrosa*. The examination of the fossil fin spines of Cestraciontidae reveals the existence of a rough surface with either median or lateral teeth, which may have been occupied by glandular structures similar to those found in Cestracion. The surface of the spine is otherwise covered with enamel which shows bosses or ridges running in a longitudinal direction. The fossil fin spines of the Pleuracanthidae were also described and discussed in view of the probability of the presence of glandular tissue in the fresh state; and the similarity between the head spine of Pleuracanthus and the caudal spine of the sting ray was pointed out. The poisonous effect of the Malay sting rays and the uses that the venom is put to by the natives were described. Clinical observations on wounds by the spines of dog-fish have been confirmed by inoculation experiments. Fish inoculated in the lateral line showed a great increase in the respiratory rate, and passed into a somnolent condition. They showed a tendency to lie flat on the side of the puncture, and there was often a spastic condition of the muscles at the site of inoculation; if the fish recovered from the immediate effects of the venom, it developed an area of pink oedema of the muscles which did not go on to suppuration, and was not accompanied by intra-peritoneal or other haemorrhages. The venom of the weever is more deadly; it produces intense and agonizing pain, and there is haemorrhage in experimental inoculation both at the site of the puncture and in the peritoneum. Injection of the venom is followed in fish by paralysis of the muscles on the side of inoculation, and in small laboratory animals by paralysis of the hind quarters. If the dose is insufficient to kill the animal by its effect on the respiration, an abscess forms at the site of puncture, and *post mortem* there is found a pure necrosis of the muscular tissue. Weever venom is a powerful haemolytic poison, and is also leucotoxic and so breaks down the resistance and allows a rapid bacterial infection to take place. Dr. Muir Evans found that filtration of glycerin extracts of the venomous spines of the weever through filter paper or a Berkefeld filter removed a constituent of the venom and deprived it of its haemolytic power on washed red corpuscles. Haemolysis did not take place with filtered venom unless a small quantity of serum heated to 60° C. was added, or a solution of lecithin; with unfiltered venom, however, haemolysis took place without the addition of any activating substance. Experiments were described showing that the efficacy of the native remedy, Abrus, used against the effects of wounds produced by Synancée, a member of the Scorpaenidae found in Réunion and Mauritius, depended on a physiological antagonism between abrin and the haemolytic constituent of the venom. Practical methods of treating the wounds produced by venomous fish were described.

SNAKES AND THEIR VENOMS.

THE poisonous snakes of Africa were the subject of an "occasional lecture" at the Royal Society of Medicine on June 28th by Lieut.-Colonel H. Watkins-Pitchford, R.A.V.C. The lecture was not of the narrow, zoological character that the title might suggest, but contained a good deal of interesting fact and philosophy about snakes in general. Although there has been an age-long antagonism between the seed of the woman and the seed of the serpent, which finds frequent expression in classic sculpture (for instance, in the Laocoön in the Vatican), a truce has been called occasionally—witness the association of the snake with Aesculapius, perhaps also the raising of the brazen serpent by Moses in the wilderness, and the guarding of the sleeping Buddha by a cobra. The revulsion with which snakes are commonly regarded tends, the lecturer stated, to disappear among those who have to do with the reptiles in captivity; familiarity breeds tolerance, and even liking. The anatomy, especially of the mouth parts, of the two great classes of snakes—the viperine and the colubrine—was described. The viperine snake was capable of inflicting a much deeper wound than the colubrine. In the puff adder, one of the viperine snakes, he had seen five perfectly canalized fangs of decreasing size. As the viperine snake struck, the fang was brought into the erect position, but the ejection of venom was not a purely mechanical process, and some snakes at least had the power of preventing the expression of venom even when the fang was fully erected. The snake seemed to realize that the number of rounds in its pouch was limited, and it did not use its poison apparatus unless it was frightened or provoked. It killed its small prey generally by a stroke, and only when its victim was refractory or elusive did it emit the venom. With the exception of the Australian tiger snake, the snake with the most toxic venom was an African variety, the black mamba, whose venom had twice the toxicity of that of the puff adder. The amount required to kill a man, judging from the amount required to kill a rabbit, was one-fifth of a grain. He had dissected out from the poison fangs of the black mamba about 2½ grains of venom, so that this creature possessed sufficient armament at any one time to kill twelve or thirteen persons. The toxicity of snake venom, however, varied according to the time of year. There was a widespread belief that snakes were more poisonous in the spring, and it might be that seasonal changes influenced not only the activity of the gland but the contents of the secretion. The second most deadly African snake was the *Naja nigricolles*, or black-necked spitting snake, so called from its power to eject venom for some distance. Under excitement the neck structures of this snake became enormously swollen, but this was no more than intimidation, like the bristling of the lion's mane. The power of ejecting venom in a jet or spray was possessed chiefly, if not entirely, by the hooded snakes. Contact of this venom with the eye set up intense conjunctivitis and permanent loss of sight sometimes ensued. In the collection of venoms chloroform was not necessary if the operator was active and competent. The reptile was seized directly behind the head with a ratchet forceps, lifted from its cage, the mouth opened by depressing the lower jaw with the underside of a watch-glass, and the poison sac squeezed with the forefinger, the poison being caught by the glass as it dripped from the fang. The snake was then solaced with a raw egg and put back in its cage. This process could be repeated several times with the same

reptile. Venoms acted in various ways: colubrine venom acted primarily on the respiratory centre, and viperine primarily on the vasomotor centre. Evidently, to judge from the *post-mortem* indications given by Shakespeare, it was from colubrine venom that Cleopatra died:

> Here, on her breast,
> There is a vent of blood and something blown:
> The like is on her arm.

Not often was death so dramatic as Shakespeare pictured it:

> Tremblingly she stood
> And on the sudden dropp'd.

The fatal result with colubrine poisoning did not usually take place until after the passage of some hours. With viperine venom, should the fatal result be postponed or averted, the delayed effects were much more serious and pronounced than with colubrine venom, and there was widespread tissue involvement around the bite. Unfortunately, owing to the time limit, Colonel Watkins-Pitchford had to curtail his lecture, and to omit altogether what he had proposed to say about the preparation of antitoxins. Sir Leonard Rogers, in proposing a vote of thanks, said that he had investigated the action of the venom of the African puff adder some years ago and found the essential effect of the bite to be a vasomotor paralysis.

SPIRIT PHOTOGRAPHS.

THERE is a society or club known as the Magic Circle which consists of professional conjurers, but admits a few approved amateurs, to the kindness of one of whom, a distinguished member of the medical profession, we are indebted for a copy of a report, dated May 31st, issued by the Occult Committee of the Circle. This committee, which consists of expert conjurers, has been appointed to investigate what are called "spiritualistic phenomena," and at the suggestion of Sir Arthur Conan Doyle appears to have turned its attention first to spirit photographs. The report deals with the inquiries made by the committee into the claims of two people —a man and a woman—who it was alleged were producing spirit photographs of a remarkable nature in unopened packets of photographic plates. Neither of the mediums came out of the ordeal unscathed. When a fraud-proof packet was sent to the male operator he obtained no results. He stated that the packet had twice been "held," but that the "usual sensation" had not been felt. As soon, however, as a packet that could be tampered with was submitted, a "psychic extra," as it appears to be called, was obtained on one of the plates. Unfortunately for the performer the conjurers had tampered with the packet first. In addition to other tests, a straight line of red varnish (invisible in the red light of the dark room) had been painted across the top left side of the edge of the stack of six plates. On the return of the packet by the medium three of the red marks were found at the bottom, showing that these plates had been reversed. When the operator was asked for an assurance that the packet had really been returned unopened, he replied in the affirmative. He said that it was quite usual to get adverse remarks from persons who did not understand, and that such remarks were not worthy of notice. Shall we admire the power of spirits, or deplore the frailty of human nature? The lady medium was vouched for by Mr. and Mrs. Hewat McKenzie, who conduct an institution known as the British College of Psychic Science. Three sittings were held with this medium. First, two members of the committee secured a private sitting. It was required that the plates, enclosed in a sealed packet, should be sent for "magnetization" some days in advance, and at the sitting these plates were exposed, and on development "extras" were on most of them. On one a face was visible in the midst of a cotton-wool effect; the others had crude markings, ascribed by the medium to unformed "ectoplasm" or to "spirit lights." As will be observed, she had acquired some of the latest spiritualistic terminology. At the second sitting, arranged by Mrs. McKenzie, a sealed box of six plates, forwarded in accordance with instructions, was produced by the medium. The box was opened and the plates transferred to metal dark slides; a service was then held, hymns being sung, and the Lord's Prayer recited. The plates were then exposed and an "extra" appeared on one of them—on No. 1 plate—which the investigators satisfied themselves had been substituted for the first plate of the original package. The medium had by this time become suspicious and nervous, and in fact she was not equal to holding her own with professional conjurers. She, however, consented to a third sitting, and for this an unopened box of unprepared plates was sent. It therefore became necessary that the plates should be secretly marked before being placed in the dark slides. One of the investigators, having placed the open stack of plates before the medium under the ruby light, secretly attached a small pad of pink material, chemically prepared, to the ball of his right thumb, and in handing the plates one by one to the medium an invisible mark was impressed on each. The medium gathered up the slides, and going into the studio took them to a small table on which her handbag was standing. The ostensible object was to obtain the hymn-books for the service, but the move being anticipated, the members of the deputation placed themselves in convenient positions to observe her actions. The hand holding the slides was seen to be placed inside the bag; one slide was dropped into a side pocket and a duplicate slide picked up with the hymn-books. Four plates were developed, and on one which did not show the mark a "spirit extra" appeared. All this may be amusing to the cynic, but the conclusions the committee of the Magic Circle draw are that although spirit photographers, like conjurers, meet changing conditions by the adoption of new methods, there are at present at least two methods in general use by some, at least, of the mediums who devote themselves to obtaining photographic "extras." In the one case, when the plates are accessible before the sitting, the spirit form is impressed, in advance, by contact with a selected transparency. In the other, when the packet is not available beforehand, the exchange for a prepared plate is made by a subtle move after the original plates have been loaded into the dark slides. The committee assert that they have never imposed a test which would not have served to demonstrate the straightforwardness and honesty of the medium, and conclude with a promise to extend to any honest medium fair, impartial, and courteous treatment, and to give him a free hand to carry out the experiment in his own way.

A MEDICAL PLAYWRIGHT.

THE doctor as dramatist is a figure of considerable importance in the modern theatre, as witness Tchekhov in Russia, Arthur Schnitzler in Austria, Henri de Rothschild in France, and Somerset Maugham in England. The name of Frank G. Layton (whose new play, in six scenes, *The Prophet*,[1] has lately been published) is likewise favourably known, in the rather smaller if more eclectic world of the English repertory theatres, as the author of *The Parish Pump*, *The Ferriport Election*, and other character comedies of the present day. *The Prophet* is cast in a different mould; its action takes place at Jerusalem in the Old Testament times of the campaign of Sennacherib against King Hezekiah. A parallel may be drawn between this play and one written by Arnold Bennett a year or two ago. *Judith* was brisk and engaging enough to read, but it failed upon the stage, in spite of a highly spectacular and picturesque production and some excellent acting. Such might also be the fate of *The Prophet*, and for like reasons. We have enjoyed reading this play, but for acting purposes its interest seems a little too diffuse: the attention wanders from character to character, the scenes fall away instead of being cumulative, and the climax—when it comes—is disappointing. Again, the colloquial dialogue, while entertaining, is not always "in the picture." Dr. Layton can, of course, point to the successful employment of modern terms and dialogue in Shaw's *Caesar and Cleopatra* and in other plays, but not mixed thus: "*Poet:* This Prophet is hot stuff. . . . *Officer of Guard:* May the Lord God strengthen

[1] *The Prophet*. A play by F. G. Layton. London: C. W. Daniel, Ltd. 1922. (Cr. 8vo; pp. 91. 3s. 6d. net.)

his tongue." The same kind of criticism might be made of the farcical episode in Scene V, where the citizens of ancient Jerusalem take up unaccustomed arms and are drilled on the stage in military evolutions. Where, however, Dr. Layton is particularly interesting to us is in the application of his medical knowledge to dramatic purposes—curiously enough, not often done by other medical playwrights—for in his play the attack of Sennacherib's army against Jerusalem is beaten off by no feats of Jewish valour but by the outbreak of an epidemic of plague carried by rats. As a piece of literary work *The Prophet* has many merits and it will interest and amuse medical readers, although we may confess to preferring Dr. Layton in his other and more familiar dramatic vein. We have ventured to criticize this work because we regard him seriously as a playwright.

WATER-BORNE ENTERIC.

EPIDEMICS of enteric fever are not now so common in this country as they were, but when they do occur they are generally traced to specific pollution of a public water supply. An instance which occurred in 1921 at Bolton-upon-Dearne, in the West Riding of Yorkshire, was investigated by Dr. W. Vernon Shaw on behalf of the Ministry of Health, and his report has just been issued.[1] It appears that after almost entire freedom from the disease during the previous five years, enteric fever somewhat suddenly became prevalent in the urban district during the second half of July and the early part of August; a few cases were reported also in the adjacent urban district of Darfield and a few more in nearby villages in two rural districts bordering on Bolton-upon-Dearne. The epidemic began with cases of diarrhoea and gastro-intestinal disturbance, followed a fortnight or three weeks later by definite cases of enteric fever. This is not uncommon in water-borne outbreaks of enteric in which recent faecal contamination of the public water supply has occurred. The first crop of cases was followed by others due to secondary infection, and altogether the first outbreak comprised 137 attacks and 16 deaths. A second outbreak began early in October and cases were notified down to December, the total amounting to 260 cases and 29 deaths. The second outbreak was almost entirely limited to Bolton-upon-Dearne itself, which has a population of about 3,581, and is included in the urban district of that name, the total population of which is 11,947. Thus from July to December, 1921, some 351 persons were stricken down by enteric fever in the urban district, of whom 40 died. Including 46 other cases, which occurred in districts immediately adjoining Bolton-upon-Dearne, of which 5 were fatal, the grand total of the two outbreaks was 397 attacks with 45 deaths, giving a case mortality of 11.3 per cent. Dr. Shaw, after reviewing the various causes likely to have given rise to the outbreak, excluded everything but the public water supply. In 1875 the Dearne Valley Waterworks Company began to supply the district, and the original source, a deep well, was gradually augmented by other sources. In April, 1921, the Waterworks Company was superseded by the Dearne Valley Water Board, which supplies four urban districts and certain parishes in two rural districts. Different parts of the area receive their water supply from separate sources, and in 1921 the prevalence of enteric fever did not affect two of the urban districts supplied by the Water Board. The water for Bolton-upon-Dearne is pumped from some abandoned workings of the Dearne Valley Colliery. The colliery is still being worked, but there appears to be no danger of pollution of the water in the abandoned workings, which is locally known as the "clean" side of the colliery; the water is collected in an artificial pound built of brick and concrete, which is quite impervious to soakage from the workings. The colliery, however, lies under an inhabited area, only part of which has been sewered. In the inhabited area is a wood which, during the coal strike (April to July, 1921), was raided by the strikers for fuel. In the wood and its immediate neighbourhood the sandstone rock overlies the coal measures, is near the surface, and shows many cracks and fissures. A considerable amount of human excreta was observed among the undergrowth and in ditches. During the hot and dry weather of June, 1921, the ground overlying the colliery was baked and cracked, and it is suggested that after rain impurities were carried down the cracks and fissures in the rock and reached the water in the colliery. Bacteriological examination of samples of this water in August showed it to be contaminated. Bolton-upon-Dearne itself, to which, as has been said, the second outbreak was almost entirely limited, is regarded as the most insanitary portion of the urban district. The water in the public mains was chlorinated during the whole of September, and the bacteriological report on samples taken was favourable. It appears that the people in Bolton had for some weeks given up using the public supply, and had resorted to a public pump which drew water from a shallow well immediately beneath it in the sandstone rock. This well had undoubtedly become specifically contaminated. For many weeks the weather had been hot and dry, but on October 2nd and 3rd there was heavy rainfall; it is believed, however, that surface pollutions had been drawn into this well during September. Early in November the water was found on bacteriological examination to be contaminated. People also used wells, and the water from these also was polluted. Close to the pump well just mentioned is a disused quarry in which the rock shows extensive fissures some 12 inches wide. The lower part of the quarry, which is used as a playground, is 10 feet above the level of the well; the floors of privy middens in this part are all several feet above the bottom of the well. The village feast took place on August 20th, and itinerant showmen and others camped with their caravans and roundabouts in a field above and adjoining the quarry. A good deal of human excrement and refuse accumulated in one corner of this field. A heavy strain was imposed upon the Bolton-upon-Dearne urban district council in dealing with the epidemic, especially in finding accommodation for the 260 patients of the second outbreak. Fortunately the isolation hospitals of a number of local authorities became available. In addition, an infant school was made into a temporary hospital for 30 cases, and later was extended to accommodate 43 patients.

[1] Reports on Public Health and Medical Subjects, No. 12. H.M. Stationery Office. 1922. (Pp. 44. 2s. net.)

INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS.

THE fifteenth annual meeting of the American and Canadian sections of the International Association of Medical Museums was held at the Army Medical Museum, Washington, D.C., on May 1st. There was a large attendance, including representatives of the medical services of the American and Canadian Governments. The chairman, Dr. James Ewing of Cornell University, emphasized the growing importance of the association because of its devotion to the interests of the science of morphology, which must ever remain the fundamental branch of medicine. The programme of scientific business dealt principally with museum technique and morphological pathology. Bulletin VIII ("Journal of Technical Methods") and Bulletin IX (the "Sir William Osler Memorial Bulletin") were ordered to be published. It was agreed that the Exchange Bureau and Bureau for the Preservation of the Results of Medical Research of this section of the International Association should be transferred from the McGill University Medical Museum to the United States Army Medical Museum in Washington. An interesting feature of the afternoon session was the presentation of a testimonial from the Medical Department, United States army, to Dr. Daniel Smith Lamb, assistant and pathologist at the Army Medical Museum from 1865 to 1920. The presentation was made by Brigadier-General Walter D. McCaw, Assistant Surgeon-General, who outlined the work of Dr. Lamb and called attention to the results of his labours, as illustrated by the collections of the institution in which the meeting was being held. Dr. F. B. Mallory of Boston was appointed president, and the other officers were elected for

the ensuing year. At the close of the scientific programme the meeting adjourned to inspect the large recent accessions to the Army Medical Museum and a series of special exhibits from members of the American Association of Pathologists and Bacteriologists and its conjoint societies, the International Congress of Ophthalmologists, the Canadian Army Medical Museum, and the pathological museums of Pittsburgh and McGill Universities, which had been set up in the spacious halls of the Army Medical Museum under the aegis of the International Association of Medical Museums.

THE SITE FOR THE UNIVERSITY OF LONDON.

THE answers of the Chancellor of the Exchequer to a number of questions recently addressed to him in the House of Commons with regard to the possibility of reconsidering the arrangement to use the site at Bloomsbury for the new buildings of the University of London were unfavourable but not absolutely uncompromising. Sir Robert Horne said that the Board of Education was not reconsidering the question of the site, and that therefore the question whether the site at Holland Park could be looked upon as a possible alternative did not arise. Sir Cyril Cobb, who, it may be remembered, was once Chairman of the London County Council, asked whether, if the Senate of the University of London failed within the prescribed time to fulfil the conditions under which it had agreed that the Bloomsbury site should be handed over to the University, there was any intention of advising the purchase, out of money provided from the sale of the Bloomsbury site or otherwise, of the Holland Park or any other site to provide a permanent home for the University. To this Sir Robert Horne replied that the question related to a hypothetical situation with which he was not prepared to deal at present. He admitted, in reply to a question by Mr. A. M. Samuel, that the desirability of relinquishing the scheme for the Bloomsbury site, on the ground that it was not big enough for the purpose, was a matter of opinion, as was also the question whether the Government should act upon the three resolutions passed by the London Education Authority asking that the Bloomsbury proposal should be reconsidered. The matter of opinion and controversy was, he said, whether perseverance with the Bloomsbury site might not, as was suggested, end in disaster.

POST-GRADUATE EDUCATION IN LONDON.

THE Minister of Health, Sir Alfred Mond, has arranged to receive a deputation on July 13th to lay before him the present position of post-graduate medical education in London. It will be remembered that the Committee appointed by the then Minister of Health (Dr. Addison) under the Chairmanship of the Earl of Athlone made in substance two recommendations; one was that an institute or college of hygiene should be established in London. This has been made possible by the munificent gift of the Rockefeller Foundation, aided by the promise of the Minister of Health to make an annual grant of £25,000 for upkeep. A site has been selected and other arrangements are in progress. The other recommendation was for the institution of a post-graduate medical school to serve as a centre of a great teaching organization in which the special hospitals of London, the Poor Law infirmaries, and the medical schools, with their clinical units and research departments, would all find their place. It advised that as an integral part of the organization there should be a bureau or central office controlled by a committee of management and providing a library, a hostel, and all things necessary to afford full facilities for social intercourse. Nothing has been done to advance this second recommendation, and it is on this point that the deputation intends to make representations to the Minister. The members of the deputation will include the President of the Royal College of Physicians of London (Sir Humphry Rolleston), the President of the Royal College of Surgeons of England (Sir Anthony Bowlby), the President of the Royal Society (Sir Charles Sherrington), the President of the Fellowship of Medicine (Sir George Makins), Sir Berkeley Moynihan, Bt., Sir Robert Jones, Sir R. H. Luce (Chairman of the Committee of the British Medical Association on Post-graduate Education), Sir S. Russell-Wells (until recently Vice-Chancellor of the University of London), Dr. George Blacker (Dean of University College Hospital Medical School), and Dr. Charles Buttar.

THE GLASGOW ANNUAL MEETING.

THE attention of members who intend to be present at the Annual Meeting of the Association in Glasgow is directed to the forms for "Notification of attendance" at the annual meeting and at the annual dinner, which appeared in the SUPPLEMENT of June 3rd, p. 207. These forms should be filled in and sent to the Honorary Local General Secretary, British Medical Association Annual Meeting, 22, Sandyford Place, Glasgow, as soon as possible. Those who wish accommodation secured for them should consult the list in the present issue, and communicate directly with the Secretary of the Hotels and Lodgings Committee, Dr. James Hendry, 4, Clifton Place, Glasgow, W. We are asked to state that the local office-bearers of the Section of Ophthalmology desire to entertain the members of the Association attending this Section at luncheon in the Central Station Hotel on Thursday, July 27th, at 1 p.m. It will be a great convenience if members who are likely to be present at the meetings of the Section of Ophthalmology will inform the Honorary Local Secretary of the Section, Dr. W. H. Manson, 17, Royal Terrace, Glasgow, W., as soon as possible, so that some idea of the number likely to be present can be obtained.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Senior Surgeon Commanders R.N.

LIEUT.-COMMANDER KENWORTHY asked, on June 27th, whether the attention of the Parliamentary Secretary to the Admiralty had been drawn to the position of certain senior surgeon commanders of the Royal Navy, as a result of the awarding in the year 1919 of a 50 per cent. increase in pay and pension of officers; whether surgeon commanders who were over 50 years of age at the time of this increase now found themselves entitled to a pension less than 10 per cent. greater than the old rate, though by age and length of service they had earned up to 50 per cent. increase. Commander Eyres-Monsell, in a written answer, stated that the position of these officers had already come under the notice of the Admiralty. The Halsey Committee, on whose recommendation the changes made in the rates of retired pay in 1919 were based, did not propose an all-round percentage increase in the rates, but aimed at assimilating, as far as possible, the rates in the various branches, and with this object laid down a uniform scale of retired pay for all officers of the relative rank of commander, including surgeon commanders. On this scale the rate of retired pay was subject in each case to a maximum of £600 per annum. As the maximum obtainable by a surgeon commander under the old regulation was £547 per annum, the rates for certain surgeon commanders under the new regulations were increased by less than 10 per cent.; and the percentage increase generally was smaller than that in other branches where smaller maximums were previously in force. Such a difference, however, was inherent in any scheme which had for its aim the assimilation of the conditions in various branches, and while therefore some officers might have benefited more than others by the changes made, the Admiralty did not think it desirable to make any modifications in the scheme in order to meet the case of particular classes of officers. (This matter is discussed in a leading article at p. 52.)

National Health Insurance Bill.

The report stage of the National Health Insurance Bill was taken in the House of Commons on July 3rd.

On Clause 1 the Minister of Health, Sir Alfred Mond, at the instance of Major Mackenzie Wood, explained how it was that the proposed transfer of cost from the Treasury to insurance funds included not only the higher cost of medical benefits, but also some administrative expenses. As a matter of fact, the cost of the central administration had been reduced by no less than 3d. a head. The cost of the Insurance Committees up to now had been partly borne by the Treasury and partly by the approved societies. In 1920-21 the total cost, including the cost of the Central Index Scheme, was about 7½d. per insured person per annum, made up of 4d. from the

societies and 3¾d. from the Exchequer, In 1921–22 the cost was about 7d., of which 6d. was raised from the societies and Id. from the Exchequer. Under the Report of the Geddes Committee it was proposed to abolish the Central Index Scheme and that the Exchequer grant for this purpose should cease. But the approved societies found the Central Index of great value. That was all the money that was being found; it amounted to about ¾d. a member. He had pointed out that the cost of administration for the coming year was estimated at 6¾d.

On Clause 5, applying the bill to Scotland, Major Mackenzie Wood said the effect of the clause was that insured persons in Scotland had to pay more than those in England; the transferred figure in the case of Scotland being 2s. 9d. against 2s. 4d. in England. Including administration for medical benefits, Scotland was going to pay 2s. 11¾d., whereas England was going to pay 2s. 6d. including administration, and Wales 3s. 1d. He had thought the fundamental principle of the whole scheme was a flat rate.

Sir Alfred Mond said the difference was one of the first effects of the Scottish Home Rule movement. When the Act of 1918 was passed Scotland, as well as Wales, insisted on having separate benefit funds. The medical payment for doctors in Scotland and Wales had always been more than in England, for the simple reason that the population in those countries was more scattered and sparse and there were greater mileage rates. There had never been a flat rate in the sense indicated by Major Wood. The State had borne the difference between the rates in England, Scotland, and Wales. When that grant came to an end the alternatives left were either that poorer people in the sparsely populated districts in the Highlands or in Wales should have no medical treatment, or much less adequate treatment than they now received, or there must be a reduction in the mileage rates in England because there can be no pooling for England, Scotland, and Wales for medical benefit. The idea, no doubt, that Scotland could not indent on the English Fund was a novelty, but under the Act of 1918 Scotland insisted on having a separate benefit fund. Therefore either the medical profession in Scotland must come under an arrangement whereby they would receive less money or the patients receive less benefit.

In the course of further discussion, after speeches by Mr. Adamson and Mr. Hogge, Sir A. Mond pointed out that the bill did not affect the contract with the doctors. The bill altered the payment from the Treasury of a certain part of the medical benefit to the societies.

Mr. Rhys Davies again brought up the question of the position of approved societies in regard to agreements with the doctors, and asked for a further statement. Sir A. Mond replied: "On the second reading I made a very full statement on this question and also in Committee upstairs. When I made this arrangement with the approved societies I gave them clearly to understand that they would be consulted in the fullest sense before the Ministry entered into any further arrangement with the medical profession, and I wish now to repeat this statement. Most certainly the approved societies will be taken into consultation."

The bill was afterwards read a third time.

The Finance Bill.—In Committee on the Finance Bill, on June 28th, the Chancellor of the Exchequer informed Mr. Rose, who had moved a new clause, that originally only those entertainments the whole proceeds of which were given to a charity were exempt from the duty, but that had been modified to the effect that where not more than 20 per cent. of the proceeds had been spent upon expenses the entertainment should be exempted from the duty. He recognized that projects for many philanthropic and charitable objects were not pursued because the expenses could not be kept within the present narrow limits of concession. He was therefore willing to increase the amount of allowance for expenses from 20 to 30 per cent. A clause to that effect would be proposed on report. Subsequently the Chancellor of the Exchequer accepted a new clause, moved by Sir E. Bartley-Denniss, providing that Corporation Profits Tax should not be charged on the balance of an association registered as a company with limited liability but without the addition of the word "limited" to its name. The associations affected are Chambers of Commerce, University Colleges, and other educational institutions incorporated under the Companies Act. Such associations make no profit, but sometimes have a balance in hand from their subscriptions which the Inland Revenue authorities have sought to regard as profit.

Voluntary Hospitals Grants.—Sir Alfred Mond, on June 27th, in a written answer, gave a list of grants approved by the Voluntary Hospitals Commission up to June 17th, 1922. The following grants have been allocated to the teaching hospitals of the metropolis: Guy's £6,900, King's College Hospital £10,000, the London Hospital £10,000, the Middlesex £13,220, the Royal Free £12,000, St. Bartholomew's £5,665, St. Mary's £6,580, St. Thomas's £5,350, University College Hospital £12,000. The larger grants to other hospitals in London include £4,650 to the East London Hospital for Children, £5,780 to the Great Ormond Street Hospital for Sick Children, £4,000 to the Prince of Wales's General Hospital, Tottenham, £3,500 to Queen Charlotte's Lying-in Hospital, £5,480 to the Royal National Orthopaedic, £11,000 to the Royal Northern, £3,500 to the West London, £3,400 to the Hampstead General Hospital, £3,310 to the London Temperance Hospital, £2,270 to the Miller General Hospital, £2,250 to the Queen's Hospital for Children, and £2,000 to the Victoria Hospital for Children. The larger grants to provincial hospitals include £10,000 to the Sheffield Royal Infirmary and £7,650 to the Sheffield Royal Hospital, £8,300 to the Manchester Royal Infirmary, £8,000 to Birmingham General Hospital, £3,350 to Bristol Royal Infirmary, £2,925 to the Derbyshire Royal Infirmary. The Minister of Health added that the Commission was anxious that hospitals in the provinces should expedite the presentation of their claims.

The Cases of Ronald True and Jacoby.—On the Home Office vote, on June 29th, Mr. Shortt replied to further criticism as to his interpretation of his powers under the Criminal Lunatics Act, 1884, in the case of Ronald True. He maintained that there was no question of the certificate of a doctor upsetting the verdict of a jury. The verdict of the jury stood. If True were to become sane to-morrow he would go back to prison, and there was nothing in the law to prevent his being hanged. The Home Secretary again insisted that no discretion was open to him in regard to the course to be taken. Incidentally Mr. Shortt referred also to the case of Jacoby, to correct several misapprehensions. Jacoby had been described as a young man of seventeen. He was three weeks off nineteen. It had been said that no trouble had been taken to find out whether he was insane. That was not so. He was most carefully and thoroughly examined in Brixton Prison by a very highly experienced prison doctor who was one of the chief witnesses certifying to the insanity of True. Dr. East gave the Home Office a most carefully prepared report, certifying that Jacoby was absolutely sane and above the normal intelligence. Those responsible for his defence went to a well-known medical expert, one of the chief of those who gave evidence that True was insane. This doctor refused to say anything in evidence except that Jacoby was perfectly sane. That was what happened before the conviction. Afterwards Jacoby was examined for a third time—at the instance of the Home Office—by a highly experienced doctor who absolutely confirmed what the other two doctors said.

Pensioners.—Mr. Macpherson informed Mr. Gilbert, on June 29th, that during the years 1920 and 1921 the approximate number of deaths among pensioners was as follows: Men, 19,500; widows and other dependants, 16,000. On the same day Mr. Macpherson supplemented answers previously given as to the limitation of special diet allowed to pensioners. Additional allowances for special diet had not (he said) been withdrawn from pensioners suffering from tuberculosis or diabetes. The allowance was, indeed, expressly continued in those cases by the new regulations when the rate of pension or allowances and other circumstances justified a grant. The allowance was not provided for by the terms of the warrant, and had never been attached to any class of pensions. Hence no breach of faith was involved in a modification of the regulations. Mr. George Barker asked, on July 4th, whether the Minister of Pensions was aware that the Abertillery and district local committee had passed a resolution expressing alarm at the apparent tendency of medical officers of the Ministry of Pensions to certify men as fit for work, and as not requiring treatment after the pensioners' panel doctors had certified them as unable to work and in need of treatment. Major Tryon said the resolution appeared to have been passed under a misapprehension. Medical officers of the Ministry were required only to certify whether or not a man needed a course of special treatment, and whether he would in consequence of that treatment be unable to work, and would therefore become eligible for allowances under Article VI of the Royal Warrant. The question whether in any individual case the man needed special treatment which it was not within the competence of the insurance practitioners to give was, and must be, entirely one for the judgement of the medical officer of the Ministry who examined the man. The Ministry had no reason to doubt that the instructions in force provided for every man duly receiving the treatment necessitated by his case in accordance with the provisions of the Royal Warrant.

Indian Medical Service.—On June 27th Mr. Hogge asked the Under-Secretary of State for India whether he would consider the advisability of putting the Indian Medical Service on terms of equality with regard to pensions and commutation with members of the Indian Civil Service. Earl Winterton replied that officers of the Indian Medical Service were not alone affected, and promised to consider the whole matter. He returned a similar reply to Dr. Fremantle, who asked whether the difference would be remembered between Europeans and Indians in regard to attendance upon white patients.

The Supply of Chemicals.—Dr. Murray, on June 19th, asked the President of the Board of Trade whether in view of the statement by the Dean of the Faculty of Science, in University College, London, that certain chemicals were unobtainable in this country, and had to be imported from Germany, and duty paid on them, he would consider the expediency of seeking powers to exempt such chemicals from the operation of the Safeguarding of Industries Act. Mr. Baldwin said that his attention had not been called previously to this particular statement, but he was aware that certain chemicals were not at present manufactured in this country, a fact which was one of the main reasons for the Safeguarding of Industries Act.

Short Notes.

The Lords amendments to the Infanticide Bill, which was originally called the Child Murder (Trial) Bill, were considered in the Commons on June 30th, and were accepted. The bill was introduced in the Commons by the Labour party, and was in charge of Colonel Wedgwood.

The Local Government and Other Officers Superannuation Bill.—Sir H. Nield, on June 30th, moved the third reading of this bill, which was agreed to without division. Its objects were explained at the earlier stages.

The Minister for Education has found it possible to remove in nearly every case the restriction on the number of defective children who may be sent to existing special schools by local education authorities. A new circular is to be issued to the authorities in a few days.

In reply to a question as to the traffic in cocaine, Sir John Baird (Under-Secretary for the Home Department) has stated that he hoped before long to introduce a short bill increasing the penalties which might be imposed under the Dangerous Drugs Act.

NINETIETH ANNUAL MEETING
of the
British Medical Association,
GLASGOW, 1922.

THE GLASGOW SCHOOL OF MEDICINE.

THE Glasgow School of Medicine may be said to have arisen at a very definite date (1599), and to have been founded by one definite personality—Peter Lowe. At the close of the sixteenth century Glasgow was a town of about 7,000 people, holding only about the eleventh place of importance amongst Scottish towns. It was probably an insanitary town, not worse than others at the time: its houses built of wood and roofed with thatch; its drainage system consisting of primitive gutters or syvers in the streets; frequently visited by plague and possessing a persistent outcrop of leprosy. Medical practice was in the hands, in the first instance, of a few physicians trained in the schools of Italy, France, and the Low Countries; then there was a fairly large body of barber-surgeons, the general practitioners of the period, not banded together in a corporation, as in Edinburgh and London; then there were also a few barbers who practised surgery only, and, in addition to these, a horde of charlatans, pretenders, sellers of simples, and mediciners of all sorts.*

THE FOUNDING OF THE FACULTY OF PHYSICIANS AND SURGEONS.

In 1598 the Kirk Session urged the Town Council to institute some means whereby the skilled and unskilled practitioners of medicine could be distinguished. In April of the following year the Council appointed a committee (how curiously was that method of getting out of a public difficulty in vogue even then!), three bailies, three city ministers, and three university officers, "with other men skilled in the art to examine for the future those who practised in the town." It is probable that the influence of Peter Lowe was at the back of all this. He certainly found means of making some kind of representation to King James VI. The king—it was he who a few years later became James I of England—granted in November, 1599, letters under the Privy Seal empowering Peter Lowe and Robert Hamilton "to examine and try all who professed or practised the art of surgery to license 'according to the airt of knowledge that they sal be found wordie to exercise' those whom they judged fit and to exclude the unqualified from practice with power to fine those who proved contumacious." The Visitors, as Lowe and Hamilton were called (the Visitor is still the title of the Vice-President of the Royal Faculty of Physicians and Surgeons), reported to the city magistrates cases of poisoning or violent death, and excluded from the practice of medicine those who could not produce a testimonial from a famous university where medicine was taught. Associated with them was William Spang, an apothecary in Glasgow, who assisted in the regulation of the sale of drugs, especially poisons. Those licensing powers were strictly maintained, and extended far beyond the city to the baronies of Lanark, Renfrew, Dumbarton, and the various divisions of Ayrshire. Thus was created in 1599 the Faculty of Physicians and Surgeons of Glasgow. It is a curious fact that in Glasgow the two great branches of the profession were in those early days, and still are, associated together in one corporation, differing from the practice in Edinburgh, London, and Dublin, where physicians and surgeons are organized in different colleges.

MAISTER PETER LOWE.
(From the portrait at the Royal Faculty of Physicians and Surgeons.)

PETER LOWE.

Maister Peter Lowe was a Scot whose early manhood was spent abroad. He saw service in France and Flanders, and was surgeon-major to the Spanish regiments at Paris for two years. He published in London, in 1595, a book on the Spanish sickness. He came to Glasgow probably in 1598 and was town's doctor, for there is a record in the minutes of the Town Council of March 17th, 1599, that certain sums of money were to be paid to him for attending the poor of the town. He had been so long away from the country that when he returned he was possibly unaware of the changes in the Church government which had taken place and the introduction of the austerities of Calvinism. At all events he was for some offence sentenced by the Presbytery of Glasgow to stand "on the pillar." The offence must have seemed trivial, for the doctor paid no attention to the command of the clerics, apparently treating the whole matter as a jest. The Presbytery, however, was in no joking mood, for he was condemned to stand two Sundays on the pillar and pay his fine as well to the "thesaurer" of the kirk. Peter Lowe was probably the first to write a textbook on *Chirurgerie*, which was published in London in 1597. He claimed to belong to the College of Sworn Master Surgeons of Paris, the members of which were known as "Surgeons of the Long Robe," to distinguish them from the barber-surgeons, who were "Surgeons of the Short Robe." Lowe died in 1612. His tombstone can still be seen on the south wall of the cathedral churchyard. It is the property of the Royal Faculty of Physicians and Surgeons of Glasgow, and bears the following quaint inscription:

"Stay. Passenger. And. View. This. Stone
For. Under. It. Lyis. Such. A. One
Who. Cuired. Many. Whill. He. Lieved
Soe. Gracious. He. Noe. Man. Grieved
Yea. When. His. Phisicks. Force. Oft. Failed
His. Pleasant. Purpose. Then. Prevailed
For. Of. His. God. He. Got. The. Grace
To. Live. In. Mirth. And. Die. In. Peace
Heavin. Hes. His. Soul. His. Corps. This. Stone
Sigh. Passenger. And. Soe. Be. Gone

Ah Me I Gravell Am And Dust
And To The Grave Deshend I Most
O Painted Piece Of Liveing Clay
Man Be Not Proud Of Thy Short Day."

EARLY DEVELOPMENT OF THE MEDICAL SCHOOL.

During the seventeenth century the Faculty of Physicians and Surgeons gradually developed some kind of organization and made its influence felt in the city. It retained the whole control of licensing of practitioners and surgical apprentices such as it was, and indeed more than two centuries afterwards, when medicine and surgery had long been recognized as subjects of study and examination in the University, the

* Previous articles, on the City and University of Glasgow and its medical institutions, have appeared in the BRITISH MEDICAL JOURNAL of December 3rd, 1921, p. 961, January 7th, 1922, p. 29, February 11th, p. 242, April 22nd, p. 649, and June 3rd, p. 883.

Faculty obtained a decision from the Court of Session that without examination and licence by them the holder of a university degree was not entitled to practise surgery within the fairly wide territory of the Faculty.

In this century the University had for itself begun to recognize the importance of the study of medicine. In 1637 Robert Mayne was elected Professor of Medicine. His duty was to "teache ane publickt lecture of medicine in the said Colledge once or twyse ewerie weik, except in the ordiner time of vacance." But in 1642 a Commission of Visitation of the General Assembly found that the profession of medicine was not necessary for the college in all time coming, but allowed Mayne to continue to be professor during his life. He died in 1646, a year in which there was a virulent outbreak of plague, so severe that the University migrated in a body to Irvine on the Ayrshire coast. In that year the plague-stricken people were deported to the Muir lands of Sighthill in the northern part of the city, where they were visited by John Hall, the principal surgeon of the day, a man plainly built in heroic mould, carrying out his medical duties with the courage of all medical heroes.

It is not till the first half of the eighteenth century that we come again upon the names of men who built up the Glasgow School. In 1714 Dr. Johnstoun was appointed by the Faculty of the University to the revived Chair of Medicine. With the beginning of the century the University began to give degrees in medicine, though not to teach the subject. In 1720 a Chair of Anatomy and Botany, two subjects curiously linked, was founded, and Thomas Brisbane was appointed. Brisbane, however, disliked anatomy and would not dissect; he appears to have had no great objection to teaching botany. In 1727 he was ordered to teach anatomy if even ten students entered—the whole story has a peradventure ring about it—but there is no record that he did so. He gladly handed over these duties to Mr. John Paisley, who taught anatomy for ten years in the Humanity classroom. One of Mr. Paisley's apprentices, William Cullen, was destined to make for himself an everlasting name as the founder of modern medicine, and was to a notable degree the fount and stimulus of the Hunterian inspiration.

WILLIAM CULLEN.

William Cullen was born in Hamilton, a county town ten miles south of Glasgow; he was the son of a lawyer, factor to the Duke of Hamilton of that day. After finishing his studies in Glasgow he spent a *Wanderjahr* in a voyage to the West Indies, and on his return pursued his studies in London, and later in the quickly growing medical school of Edinburgh. He began practice in Shotts, and then removed to his native town, and until recently the house in which he practised was standing at the corner of Castle Street and the New Wynd. His reputation spread, and in 1744 he came to Glasgow, notwithstanding the efforts and promise of a laboratory by the Duke of Hamilton. Almost immediately he began to lecture, and these lectures were apparently the first systematic attempt to teach medicine in the city. He broke new ground by discarding Latin and lecturing in English. He lectured on botany, physic, materia medica, and lastly, on chemistry. In 1751 he was appointed Professor of Medicine, an appointment he held but a short time, for four years later he was transferred to the Chair of Chemistry in Edinburgh University. In Edinburgh also he taught medicine, and introduced the epoch-making change of bedside teaching. His most important work was done in Edinburgh, but he had done great and notable work for the Glasgow school: he had set going classes of instruction in medicine, materia medica, botany, and chemistry; he had attracted large numbers of students; he had extended the reputation of the University amongst professional and scientific men not only in the United Kingdom but also on the continent of Europe. "He was one of the rarest species of the man of science—a masterless master." His influence on William Hunter was profound. They came together when Cullen was 27 years of age and Hunter 19. Cullen gathered the latest publications on medicine and chemistry, made frequent experiments himself, and (most extraordinary of all) kept accurate notes of every case in his practice, a plan adopted, too, by his senior, Smellie, in Lanark.

William Hunter studied both in Glasgow and Edinburgh, and in 1750 Glasgow conferred upon him the degree of M.D. His influence is perpetuated for all time in the Hunterian Museum, a storehouse of marvellous wealth in books, pictures, coins, as well as anatomical and pathological specimens. Sir William Gairdner always began his course of lectures by long quotations and references to Cullen's *Nosology*, for Gairdner regarded Cullen as the opener up of a new era in medicine, as the first to cast aside the old traditions and canons and to teach that the physician was the servant of nature, and that disease must be learned only from direct study of the patient.

The Hunterian Homeland.

Associated with that period and to some extent with Cullen himself was a group of men who left a lasting and deep impression on the world of medicine. All were not specially connected with the Glasgow School, but their influence on it must have been felt. It is remarkable that these small villages of the Clyde Valley—Hamilton, East Kilbride, Lanark, Bothwell—should at the same period have produced a group of minds of the highest scientific quality. We have pointed out that Cullen was born in Hamilton. William and John Hunter were born at Long Calderwood in the parish of East Kilbride. Mathew Baillie, nephew of the Hunters, was born in Bothwell. William Smellie, the famous London obstetrician, was a Lanark man and practised there before the desire for wider scope and opportunity drove him south. Hunter was an intimate friend of Cullen, worked as his pupil or apprentice for two years, and it was his intention to practise with him in Hamilton as his surgical partner. But an appointment with Douglas the anatomist proved so enticing that William Hunter remained in London. Another friend of Cullen, older than he, was Dr. John Gordon, a practitioner in Glasgow, President of the Faculty in 1755. He was friend and correspondent of Smellie. His pupil Tobias Smollett introduced him as "Potion" in *Roderick Random*. Smollett's place with Gordon was taken by John Moore, father of the hero of Corunna. He too with Smollett was found in London amongst the Hunterians.

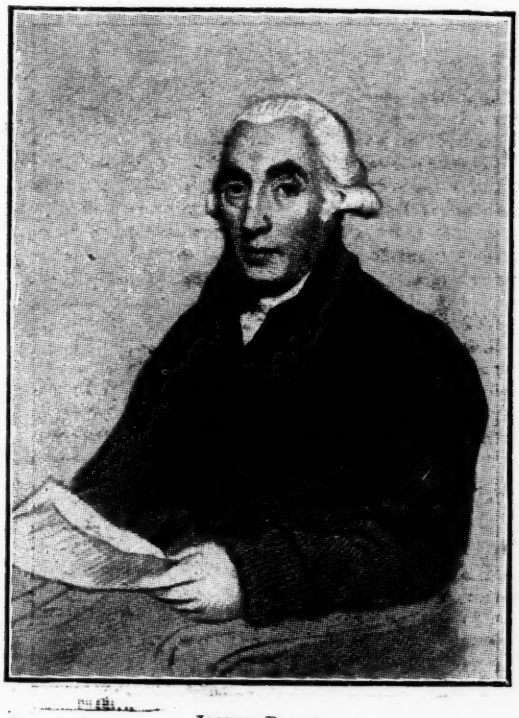
When Cullen and William Hunter dreamed of making Glasgow a great Medical School—Leyden and Edinburgh were the patterns—building the science of medicine on a foundation of chemistry, John Hunter, the greatest of them all—"the Shakespeare of Medicine"—was a rough, harum-scarum, auburn-haired lad, working on the farm at Long Calderwood, ignorant of books, but quick and apt to see and know the things of nature around him.

An Interesting Succession.

Another friend and pupil of Cullen was Joseph Black, of "latent heat" fame: Black was the discoverer of latent heat, but the first suggestions regarding it came from the fertile brain of Cullen. Black succeeded to the Chair of Chemistry in Glasgow when Cullen went to Edinburgh. One of his pupils in turn was James Watt, and so the torch was handed on. Dr. Freeland Fergus has fondly pointed out a most

interesting succession: Cullen taught Joseph Black; Black taught Thomas Thomson; Thomas Thomson when Professor of Chemistry taught Graham, afterwards Master of the Mint and for some time Professor of Chemistry in Anderson's College; Graham in University College, London, had as a pupil Joseph Lister. Thus the founder of modern medicine is linked *longo intervallo* with the founder of modern surgery. These men all belonged to the Glasgow School and their names are inscribed on the roll of Fellows of the Royal Faculty of Physicians and Surgeons.

Joseph Black.—When Cullen left Glasgow Joseph Black became the dominant figure in the University world. A student of Glasgow University both in arts and medicine, he attracted the notice of Cullen and became his pupil and assistant. His medical course was finished in Edinburgh. In 1756 he succeeded Hamilton as Professor of Anatomy and Botany, and a year later was appointed Professor of Medicine in addition. He succeeded Cullen as Lecturer in Chemistry, and that branch of science permeated all his other teaching. His great achievement in Glasgow was the discovery of latent heat. His experiments were closely watched by other professors and by another man of genius, James Watt, whose workshop was housed in the University grounds. It is in a way a matter of regret that Glasgow lost the great services of Cullen and Black on their successive removals to Edinburgh. When that change came, when Black removed to Edinburgh to succeed Cullen in the Chair of Chemistry, the Lectureship in Chemistry in Glasgow was held by John Robison, about whose name flits a story of another kind. In his youth he had been a middy in the Navy and was in the boat in which Wolfe went to inspect some posts before the storming of Quebec. He brought back the story of the great "General repeating aloud nearly the whole of Gray's 'Elegy,' then recently published, and declaring that he would rather be the author of that poem than conquer the French on the morrow." His career did not end as a University lecturer in Glasgow, as he became secretary to Knowles, who was then at the head of the Russian Admiralty, and finished as Professor of Natural Philosophy in Edinburgh University.



JOSEPH BLACK.

Thomas Thomson deserves special mention. He was a graduate of Edinburgh, M.D. in 1799. Before then he had achieved distinction, as he became editor of the *Encyclopaedia Britannica* in 1796 when only 26 years of age in succession to his brother. He was the introducer of the oxy-hydrogen blowpipe and of the system of chemical symbols and chemical equations. He was appointed to the Chair of Chemistry in 1818, and was Physician to the Royal Infirmary for two years only. He was a man of quaint enterprise, and stories are told of him by Dr. Freeland Fergus. He walked all the way from Edinburgh to Glasgow in 1808 to see the Tontine illuminated by coal gas. Once when on a paddle steamer on the Clyde, in the earliest days of steam, he had got hold of a bucket and a rope and went out on the wing of the paddle to draw a sample of the churned-up water after it had passed the paddle. Whatever his idea in making the experiment he seems to have forgotten one factor, for the pull on the bucket made him lose his balance and he was, with some difficulty, saved from a watery and inglorious end. He was popular, as he became the first chairman of the newly organized Medico-Chirurgical Society in 1844.

Thomas Graham brings the story of the Glasgow School down to the middle of the nineteenth century. Though not a doctor he required to become a Fellow of the Faculty to lecture on chemistry to students of medicine. He was the outstanding physicist and chemist of his time. He did not belong to the University but was Professor of Chemistry in Anderson's College. His work on *Diffusion of Liquids* appeared in 1846. In 1837 he was appointed to University College, London, and in 1854 he became Master of the Mint.

THE GLASGOW MEDICAL SCHOOLS.

The University.

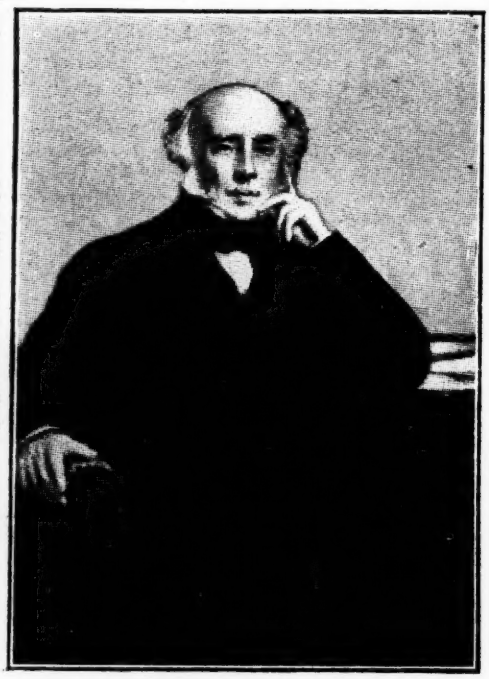
At the end of the eighteenth century the University Medical School had a staff of six teachers, a Professor of Medicine, a Professor of Anatomy, and lecturers on chemistry, materia medica, midwifery, and botany. The medical students were nearly 200 in number. The Royal Infirmary had been opened in 1796 and provided an ample field for clinical work. The Napoleonic wars awakened the authorities to the needs of surgery, and in 1815 the Chair of Surgery was founded. The Chairs of Physiology or Institutes of Medicine and of Forensic Medicine were founded in 1839. The close proximity of the University to the Royal Infirmary made it easy to carry out the clinical teaching, and up till the removal of the University to the west end of the city the wards of the Royal Infirmary were crowded with students. To-day University students overflow from the Western Infirmary back again to the Royal Infirmary and to the Victoria Infirmary, in all of which the accommodation is taxed to the utmost, and the distribution is accomplished only by a precise limitation of the numbers admitted to the clinical classes. The story of the University has already been told in a previous article.

The Anderson College of Medicine.

The Faculty of Physicians and Surgeons, as we have indicated, was the licensing body of Glasgow, controlling the apprentices and the general practitioners. It was not a teaching body. In the eighteenth century any extra-academic teaching was occasional only. In 1764 Dr. Andrew Morris, a graduate of the University of Rheims, practised in Glasgow, and lectured on medicine in the Faculty Hall; and Mr. James Monteath lectured on midwifery from 1778 for a few years. With the establishment of Anderson's University, or as it is now called the Anderson College of Medicine, in 1795, extramural teaching became continuous. The founder of the College was John Anderson, M.A., F.R.S. This most ingenious and public-spirited man became at the age of 29 Professor of Oriental Languages, and shortly afterwards Professor of Natural Philosophy. He was the originator of the Mechanics' Institutes, and for forty years gave series of public lectures on experimental physics to the mechanics and operatives in the factories of Glasgow. He was the inventor of a gun carriage and the introducer of the balloon posts adopted by the French in 1791 in their effort to spread republican propaganda. It was to him that James Watt owed a great debt, as he befriended Watt and encouraged him in his researches and helped the establishment of his workshop in the University grounds. At Anderson's death he left the whole of his property "to the public for the good of mankind and the improvement of science in an institution to be denominated Anderson's University." The scheme for the University was complete, but it became grandiloquent when it was found that the bequest was only £1,000. However, after vicissitudes and hamperings for want of money the school began to prosper and by 1833 had a full curriculum, with more teachers than the University of Glasgow. Anderson's University was housed in a building in George Street, not far from the University of Glasgow. The popularity of the teachers and the variety of subjects induced many University students to take classes there. The classes have for many years been recognized as qualifying for University degree examinations and for the diplomas of the Colleges and Faculty. In 1886 the Medical School was separated from the other departments of work of the Anderson University, and the Technical College, now a magnificent building in George Street, City, the finest of its kind in the world, was established, the Medical School being removed to its present site close to the Western Infirmary.

The Royal Infirmary School of Medicine, and St. Mungo's College.

The removal of the University to the west and the opening of the Western Infirmary was a disastrous blow to the Royal Infirmary. Steps were accordingly taken in 1875 to rehabilitate the Royal Infirmary as a clinical school. The leading spirits in this praiseworthy effort were Dr. John Gibson Fleming, a former president of the Faculty of Physicians and Surgeons, and Mr. William MacEwan, both managers of the Infirmary. They were successful in obtaining a charter which included: "Powers to offer facilities and accommodation for the teaching of medicine and surgery and the collateral sciences usually comprehended in a medical education." At first the school was housed in temporary classrooms, and in 1883 the present commodious buildings were erected, adjoining the Royal Infirmary on its northern side. At a later period, 1889, the Royal Infirmary School of Medicine was converted into St. Mungo's College, the teaching being conducted in the same buildings. In 1912 the connexion of the Royal Infirmary with the University was re-established, when four new professorships—Medicine, Surgery, Obstetrics and Gynaecology, and Pathology — were founded. The association of the Royal Infirmary with the University is still more closely cemented by the appointment of surgeons and physicians of the Infirmary to be University lecturers and examiners. There were other extramural schools in Glasgow in former days—namely, the Portland Street Medical School and the Western Medical School—but these were on the whole short-lived, though serving a useful purpose in their day. The extramural schools of Glasgow have not only possessed teachers of their own of great eminence, but they have also provided an excellent training ground for men who rose to higher spheres in the University. Many University professors first made their name as teachers in these extra-academic schools, and when the time came they carried with them scientific and teaching reputations, the lustre of which was not as a rule dimmed by the more serene and stable atmosphere of the University.



WILLIAM MACKENZIE.

MODERN GLASGOW SCHOOL.

We may now return to consider the Modern Glasgow School. The name that stands out most prominently in the middle of the nineteenth century is that of Lister.

Joseph Lister was Professor of Surgery from 1862 to 1869, when he too, like so many of his academic forebears, yielded to the claims of Edinburgh—strong claims to him, both scientific and social. When he came to Glasgow to fulfil the duties of the Chair of Surgery he was in the anomalous position of having no wards in the Royal Infirmary, a condition of affairs which was not rectified for nearly two years. The story of his surgical achievement needs no repetition—it is sufficiently familiar. The ward in which his great work was accomplished is still extant, and quite a number of his pupils will be found in Glasgow to-day. There can be no doubt that Lister's investigations and discoveries during his term of office in Glasgow completed the discovery of antiseptic surgery. His work later was simply that of amplification and extension: it was in Glasgow, then, that modern surgery was born. In Glasgow the reception of the new ideas in surgery was more cordial and the adoption of the system more ready than probably in Edinburgh and certainly in London. With one exception, Lister's colleagues very soon came to see the true nature of the revolution, as they had been constantly in touch with what Lister was doing and heard his first expositions of the new theory. Besides, a genius like Lister attracted the younger men, and their actively receptive minds saw what a great thing it was and spread abroad the conception.

Assisting at the birth and bestowing infinite fostering care on these new ideas and practice in surgery, Sir Hector Cameron did much to maintain in Glasgow the work begun by Lister. Gifted with graciousness of manner and the silver tongue of the orator he was specially fitted for the task of advocate of the new surgical faith. A neat operator, an impressive teacher, and a man of unbounded social and professional popularity, Sir Hector held, and still holds, a position deep in the hearts of the Glasgow profession.

Sir George MacLeod, Lister's successor in the chair, belonged to a great Scottish family renowned in the Church and in social circles. His commanding presence (his nickname was "The Duke") and firm, impressive, incisive style of teaching are still remembered by many generations of students.

In anatomy Allen Thomson and John Cleland were towers of strength in Glasgow. The Glasgow School has not been regarded even by its *alumni* as essentially an anatomical school. But it had a great reverence for its teachers of anatomy. Allen Thomson was a member of a family which achieved great distinction: his grandfather was a Paisley weaver, his father became a professor in Edinburgh, his brother a professor in Glasgow, and his son a professor of chemistry in King's College, London. In anatomy he was well known as one of the editors of *Quain*, and was an early worker in embryology. He will always be remembered as having taken a most active part in the founding of the Western Infirmary.

That massive man, John Cleland, who succeeded him, made deep impressions on all his students, though it is just possible that they failed to appreciate his great capacity as an anatomist. In the subject of obstetrics and gynaecology the Glasgow School claims with pride that the first successful ovariotomy was performed by Mr. Robert Houston, Fellow of the Faculty, whose operation was performed in 1701. A complete account of the operation has been preserved in volume xxxiii of the *Philosophical Transactions*, London, 1733. And again, to Murdoch Cameron belongs the great credit of having made Caesarean section a successful, and now extensively performed, operation.

Another of the great men of the Glasgow School was Dr. William MacKenzie, perhaps the most distinguished ophthalmic surgeon in the United Kingdom of his time. Very shortly after receiving the diploma of the Faculty he went to the Continent, where he spent about two years, devoting himself chiefly to ophthalmology. In London he became a member of the Royal College of Surgeons, and began to lecture and practise in diseases of the eye. Fortunately for Glasgow, his success was so limited that he returned to the city. In 1824, with Dr. Monteath, he founded the Glasgow Eye Infirmary, an institution which has always played a large part in Glasgow medical life. MacKenzie was a clinician of the highest standard; he was probably the first to give an accurate description of glaucoma, and his observations on sympathetic ophthalmitis proved to be the first clear description of that disease.

Andrew Buchanan is a name which is written in gold in the annals of the Glasgow School. He was Professor of Physiology and also surgeon to the Royal Infirmary for a considerable number of years. He was the first to give a scientific explanation of coagulation of the blood, and his papers on this subject in 1844 attracted attention throughout the world. His rectangular staff for lateral lithotomy is a well-known instrument, and was used for that operation up till quite recently.

When the British Medical Association met in Glasgow in 1888 the presence of W. T. Gairdner, Professor of the Practice of Physic in the University and President of the Association, lent distinction to all its meetings. It is probably true to say that no man of the Glasgow School for the past two generations exercised such a wide influence and directed so

many minds along scientific paths of medicine. Glasgow men of middle age who meet in almost any capacity, social or otherwise, find even now a congenial subject of discussion in Gairdner's personality, his teaching, his philosophic mind, his scientific attainments, even, indeed, his absent-mindedness. The physician to him was first of all a naturalist. That, indeed, was the subject of one of his many addresses. His "Plea for Thoroughness" was in no sense a trite commentary on slipshod methods but was an earnest appeal for painstaking, careful, detailed investigation. "Old G." was in all essentials the "beloved physician." Gairdner was the first medical officer of health of the City of Glasgow; indeed it is almost certainly the case that he was the inventor of the whole idea of the special department of public health. His work in this department was characterized by energy and skill and imagination. Associated with him was Dr. J. B. Russell, under whose administration the public health department took first rank in the world. These two men instituted the fever hospitals, an efficient sanitary department, and the city improvement schemes, the result of which has been that Glasgow has been amongst the highest in the records of public health.

Closely associated with Gairdner and of like minds to his were Dr. Joseph Coats, the first Professor of Pathology in the University, and Dr. James Finlayson, a man of enormous clinical ability, whose learning in the bibliography of medicine was the wonder of all who came in contact with him. The Glasgow School of Pathology began to make a name for itself under Coats. He possessed the gift of surrounding himself with assistants and pupils fired with his own zeal. From the days when some of these left Glasgow to fill chairs of pathology in other schools there has been, under his successor, Robert Muir, a constant outgoing stream of pathologists from Glasgow to the medical schools of the Empire.

The School of To-day.

What the characteristics of the Glasgow School of Medicine are at the present day the visitors to Glasgow must decide for themselves. The School is fortunate in having Sir Donald MacAlister, the President of the General Medical Council, as Principal of the University. Sir Donald MacAlister's learning and accomplishments and great influence are directed to one object—the increasing glory and expansion of the University of Glasgow. As a physician himself he has more than a warm heart to the Medical School, and his activity is felt in many spheres outside the academic walls.

Of Sir William Macewen, the President of the Association, we do not presume to make an estimate. Let it be said that Glasgow is more than fortunate in possessing as its surgical head the greatest surgical genius of his day. From the time when he became surgeon to the Royal Infirmary as a very young man up till now his scientific enthusiasm has not abated nor his powers of investigation diminished. Perusal of his works on Osteotomy, Hernia, Pyogenic Diseases of the Brain, the Growth of Bone, leaves the impression on the mind that the last word has been said—that these works are classical.

What, then, will the British Medical Association find when it comes to Glasgow? A large, flourishing, virile school; a body of keen, enthusiastic teachers; students eager and anxious, interested in the profession they hope soon to enter, mingling in suitable proportions the academic and social sides of their life.

The Glasgow School makes large claims. Though Cullen did not begin clinical teaching actually in Glasgow, the clinical method and the essential foundation of medicine in the science of chemistry were established by him in his practice in Hamilton, and so the idea of clinical medicine came from Glasgow. Then Glasgow claims the birth of modern surgery through Lister. She claims the introduction of scientific midwifery through Smellie of Lanark. She claims the modern development of public health through Gairdner and J. B. Russell. And, last of all, she claims that the masters and pupils of the School of to-day are in no way behind their fathers in capacity for labour and for scientific investigation, in generous large-mindedness and imagination, and in devotion to what, after all, still is the noblest of the professions.

NOTE.—The writer of this article desires to express his indebtedness to Coutts's *History of the University of Glasgow*, Duncan's *Memorials of the Faculty*, Freeland Fergus's *Origin and Development of the Glasgow School of Medicine*, and to *The Medical Institutions of Glasgow*, published by Dr. Christie for the British Medical Association meeting in 1888.

England and Wales.

SANITARY REGULATIONS FOR THEATRES AND MUSIC HALLS.

THE Theatres and Music Halls Committee of the London County Council has been overhauling the regulations of the Council with regard to the construction of theatres, music halls, and other places of public entertainment, including cinematograph exhibitions. The regulations are chiefly directed to minimizing fire risk, but they include certain provisions for the health and convenience of the audience and of the performers and staffs. A new regulation has been inserted laying down the sanitary accommodation required in different classes of premises, according to the number of persons accommodated. Automatic flushing apparatus of a pattern approved by the Council must be installed, and all the floors of the sanitary apartments and the lobbies approaching them must be constructed of impervious material and sloped to a drain. It is also required that ventilation direct to the outer air shall be provided to the corridors in the dressing-room block, that permanent ventilation shall be provided to dressing rooms by means of flues built into the brickwork, and that dressing rooms shall be adequately heated and a supply of hot water provided. A new requirement is that natural lighting by means of windows and skylights must be provided in the auditorium and, where practicable, in all other parts of the premises, though during performances these may be obscured by curtains or shutters. A draft set of regulations dealing with the general ventilation of the auditorium, as distinct from the rooms for the performers and staff, is still under consideration.

ST. PAUL'S EYE HOSPITAL, LIVERPOOL.

The annual report of the hospital shows how successful the treatment of ophthalmia neonatorum has been during the past year. One case only, out of 222 infants treated for this disease, resulted in blindness. During the war period ophthalmia neonatorum increased, and this is the first decrease since 1915. The number of out-patients was 6,763, and it is noteworthy that there were 919 removals of foreign bodies from patients' eyes. Financially, during the past year the committee regretfully draws attention to the maintenance fund. This has been depleted to the extent of £337. A ladies' committee has been most useful in restricting expenditure; nevertheless, as the Lord Mayor pointed out, increased support was essential, and he looked forward hopefully to the immediate future when the finances of the Liverpool hospitals would be placed, each and all, on a satisfactory basis.

THE HEALTH OF WALLASEY.

This growing township, according to the annual report of the medical officer of health, Dr. T. W. N. Barlow, is in a salubrious condition. The death rate, 10.7 per 1,000, was the lowest on record. With regard to infant mortality, 59 per 1,000 births—this also was the lowest on record. Twenty years ago infantile mortality varied all over the country between 130 to 200 per 1,000 births, and 100 per 1,000 births was almost regarded as the irreducible minimum. In the case of Wallasey this irreducible minimum had itself become nearly one-half. The total number of births amounted to 1,640. The last census (1921) gave the population of Wallasey as 90,721.

Scotland.

PROPOSED INTERNATIONAL BOWLING MATCH AT THE GLASGOW MEETING OF THE BRITISH MEDICAL ASSOCIATION.

IN the SUPPLEMENT of the JOURNAL for June 17th it was stated that the Entertainments Committee proposes to have an International Bowling Match, North *v.* South, on the Willowbank Bowling Green on Thursday, July 27th, and those desiring to take part in the game were requested to send their names, with a note of their experience as match players, to Dr. William Snodgrass, 11, Victoria Crescent, Glasgow, W. The game is timed to take place between 2 and 4 p.m., thus allowing members to attend the morning Section work, have lunch and two hours' play, and thereafter be taken in a motor conveyance to the Municipal Buildings to attend the civic reception by the Right Hon. the Lord Provost and magistrates of Glasgow. So far only four members have

signified their intention of playing for the South, and it is hoped that a larger number will take part in the game so as to give it a more representative character. Notification of intention to play is requested at once, so that arrangements may be completed. Bowls will be supplied to those who do not prefer to bring their own.

GLASGOW HOSPITAL FOR SICK CHILDREN.

The annual report of the Royal Hospital for Sick Children, Glasgow, states that 12,583 patients were treated during 1921, an increase of 2,876 on the previous year. The number of in-patients was 4,749. *X* rays were used for diagnosis or treatment in 4,555 cases in 1921, as compared with 1,899 cases in 1920, and, of the total number of cases admitted, 1,679 were infants under one year. At the country branch of the hospital at Drumchapel 339 patients were treated, the average daily number of patients under treatment being 29, and at the dispensary 14,769 new patients received treatment, the average attendance for each day being 147. The total expenditure for the hospital, the country branch, and the dispensary was £34,051, and the ordinary income was £21,227, so that there was a deficiency on the ordinary income of £12,824. An extraordinary income of £17,773, which included several large grants which will not be repeated, enabled the hospital to have a balance on the year of £4,949, but the deficiency of over £12,800 in the ordinary income indicates a position which requires careful consideration by the people of Glasgow and the west of Scotland.

APPOINTMENTS TO GLASGOW HOSPITALS.

A number of important appointments have been made recently to various hospital staffs in Glasgow.

Western Infirmary.—Farquhar Macrae, M.B., C.M., visiting surgeon; Hugh Morton, M.D., F.R.F.P.S.G., assistant physician; Lawrence T. Stewart, M.B., Ch.B., assistant medical electrician; D. K. Henderson, M.D., F.R.F.P.S.G., consulting physician for mental diseases; G. Maitland Ramsay, M.D., F.R.F.P.S.G., consulting ophthalmic surgeon.

Victoria Infirmary.—John L. Howie, M.D., surgeon, and Alexander Strang, M.B., Ch.B., assistant surgeon for diseases of ear, nose, and throat.

Correspondence.

STERILIZATION OF MENTAL DEFECTIVES.

SIR,—The subject of sterilization of the so-called dysgenic classes is one that recurs periodically, and the same family histories are continually being brought forward with a refreshing sense of originality year after year. The person who advocates sterilization assumes, first, that we know exactly how heredity acts, and, secondly, that by sterilization we should only prevent the production of the unfit. The first assumption we need not discuss, as the statement carries its obvious denial. The second assumption is not based upon anything more than a general impression, added to the well-known histories of such families as the "Jukes" and the "Kallikaks": these are, of course, very striking, but a great many more family histories require to be examined in detail, before drastic, coercive action such as sterilization becomes the conclusion of the syllogism.

As an example I will quote one carefully examined series of families mentioned by Lange (Denmark). Forty-four families supplied seventy mental patients to his institution; the most numerously represented had four members, the majority only one, affected. In the ascending family lines of these patients, with their collateral branches, for a few generations, some 400 showed mental symptoms, varying from "excessive nervousness," "gloomy disposition," "variable temper," "excitability," and "eccentricity" to definite insanity. These same forty-four families, however, also produced two cabinet ministers, one ambassador, three bishops, eight prominent clergymen, three generals, several other high military officers, three admirals, several other high naval officers, three members of the High Court of Justice, two headmasters, two directors of well-known institutions, eight hospital physicians, nine university professors, at least twenty-three holders of academic doctorates, and a large number of eminent officials, business men, members of Parliament, physicians, teachers, and others of value to the community. Had, therefore, these mentally oblique persons in the earlier generations been sterilized, as recommended (and the parents of the defective as well as the defective must be sterilized), we should have lost not only the 400 mental patients but also a long array of highly valuable members of the community.

The statement that "sterilization of both sexes is carried out with great benefit in fifteen States in America" is, I believe, not correct. Recent information indicates that twelve States have limited sterilization laws on their statute books. In Indiana the revulsion of public feeling was so great that the law died a natural death; in some other States the law was promptly vetoed; in Washington it is a punitive measure for habitual criminals, and has never been put into force; in California it has been carried out more freely than elsewhere (634 insane, one criminal): the results are not known. In Connecticut, New Jersey, New York, North Dakota, and Kansas the law, though in existence, has practically not been made use of at all; in Michigan it has been applied to a few insane; in Iowa the law refers to a very large number of different classes of people, including "drug-takers" and "syphilitics" (Popenhoe and Johnson): no operation has, however, taken place under the Act.

I would conclude by quoting the cautious statement of Goddard (to whom we are indebted for the history of the Kallikak family):

"At best sterilization is not likely to be a final solution of the problem. In using it we must realize that the first necessity is the careful study of the whole subject, to the end that we may know more both about the laws of inheritance and the ultimate effect of the operation."

—I am, etc.,

JAMES R. WHITWELL, M.B.,
Medical Superintendent, St. Audry's Hospital,
July 3rd. Melton, Suffolk.

SIR,—It is much to be hoped that Lieut.-Colonel A. E. J. Lister's letter in your issue of July 1st (p. 29) will draw very serious attention to this subject. Anyone working upon mental deficiency cannot but be impressed by the constant menace to society and to the nation from those defectives not actually under institutional care. It is certainly not generally realized how great an increase in our defective population is permitted under present conditions, and the "financial stringency" now obtaining will be felt in the near future by an increased burden. If Gloucester's example were followed by other counties the outlook would indeed be black. One hopes that Mr. Davies may yet be able to impress his constituency with the seriousness of the position. Unfortunately it does not follow that all Gloucester defectives will remain in their own county.

Colonel Lister's plea for sterilization is thoroughly sound. It is conceivable that individually it might sometimes result adversely as regards general health, but the State has to be considered as well as the individual. Moreover, endocrinologists will have something helpful to say as to whether, for instance, the endocrine balance would suffer as much as it is apt to at the menopause. It would meanwhile be of the greatest interest to have reports from the medical officers of health of those States of America who have given the lead as to these and other results.

I very much hope that Colonel Lister's letter will result in widespread discussion.—I am, etc.,

CLAUDE A. P. TRUMAN,
Medical Adviser on Mental Deficiency, Devonshire
July 2nd. County Council.

SIR,—"Rem acu tetigit" is, in my opinion, the deduction reached by Colonel Lister in his letter of June 22nd (p. 29) for these reasons:

1. I have practised the art of medicine for fifty-one years, and have witnessed for three generations the deplorable results of the procreative powers of mental deficients.

2. As a magistrate of forty years' experience in three counties I have at times been exercised in dealing with cases in which it was evident the delinquent had more or less mental obliquity to estimate what portion of the offence was due to the mental condition, and it is a matter for congratulation that such cases are to-day better understood, and that medical evidence can be obtained to consider which is the predominant factor—mental disease or crime?

3. As a visiting magistrate at a large gaol I know that many of the prisoners had hereditary mental defects which explained why they were chronic criminals. Here again it is a happy sign that the authorities recognize the fact, and that any recommendations of the prison medical officers are fairly considered.

4. As a member of a county hospital for mental cases I have learned that the mental condition of the parents of certain inmates was the origin of their present detention.

5. As a member of a County Mental Deficiency Committee since the passing of the Act, 1913, extensive and intimate experience has burned into my brain that no mental deficient should by law be allowed to be a parent.

6. During the war as commandant of two large military convalescent hospitals I realized that the so-called shell shock could often be traced to family mental weakness.

To-day it may seem a relic of barbarism to advocate "the survival of the fit." Still, I am certain the present benign policy in the treatment of the young mental deficient is not only wrong on eugenic principles but is an unjustifiable expenditure of public money, imperial and rate-paid, and if the desire is to obtain an A1 population it is a mistake; all possibility of any mental deficients becoming parents must be prevented. The present feeble segregation is childish as a remedy. If the segregation were effectual the absolute sexual negation would be cruel; effectual sterilization is the only real remedy. I know a village in which a mental defective impregnated four young girls.

In dealing with sterilization of mental deficients let us put all humbug on one side and go to the rock bottom of so many of the causes of hereditary disease and so legislate that everyone who is so unfortunate as to acquire syphilis shall at once on proof be sterilized; had the procedure been in vogue how many fewer mental deficients and tuberculous people we should now have.

In your issue of July 1st two admirable reports ("The causes and prevention of foetal death" and "Foetal death") conclusively prove that syphilitic parents are a national danger. These alone are sufficient evidence that Colonel Lister's letter is on right lines.—I am, etc.,

Folkestone, July 3rd. P. BROOME GILES.

AMAAS OR ALASTRIM.

SIR,—The application of special terms even to homogeneous groups of disease which differ only in severity from an acknowledged disease entity such as small-pox would confuse and not aid our nosology. If amaas and small-pox do not resemble one another in their principal features, then amaas is a separate entity, as Dr. Garrow maintains it to be, and it is entitled to a distinctive designation other than "small-pox of a mild type."

According to Bristowe, the real disease is not merely the organic lesion but a "complex," the "sum total of morbid changes in both function and structure."

If we compare small-pox and amaas according to this definition it must be confessed they differ in totality more in degree than in kind. The above definition, however, does not cover the whole case entirely, for it is probable, though not demonstrable, that there is a difference between the virus of small-pox and the virus of amaas, for on some such hypothesis alone can the marked contrast in severity and the other observed differences of their respective manifestations be explained.

Vaccinia teaches us that the virus of small-pox is susceptible of variation or mutation. By passage through a calf or other animal the virus of small-pox is changed into the virus of vaccinia. As the etiological agent is not known the actual changes cannot be demonstrated, yet all would allow that vaccinia is a different disease from small-pox.

If one could imagine a person covered to the same extent with vaccinia eruption as he would be if suffering from an attack of small-pox, it might conceivably be difficult to believe that the case was not one of small-pox but was a different disease—namely, vaccinia—and that the difference was due to a modification of small-pox virus.

In my original paper, which appeared in the *Lancet* of May 7th, 1904, after contrasting amaas with the infectious diseases of lascars and varioloid varicella described by Drs. Brownlee and Thomson and Dr. Izett Anderson, and stating that amaas could not be confounded with these varioliform diseases, the provisional conclusion arrived at on the relationship of amaas to small-pox was that the former is small-pox modified by some undetermined factor or factors. It must be remembered that amaas so called by the natives of South Africa has been endemic here for centuries. The word "amaas" means milk, and the pearly appearance of the vesicles gives them the appearance of containing a drop of milk, hence the descriptive term of "milk-pox" given by the natives to the disease. This malady gives the Kaffirs little concern, and beyond a few days' indisposition they are little the worse for the visitation. Amaas shows predilection for the aboriginal native and half-castes and Europeans though unvaccinated are very much less susceptible to infection. The protection afforded by vaccination is indubitable, and it was chiefly for this reason that one held that amaas could not be a totally distinct disorder, but was related in some way or other to small-pox. On the other hand, the great mildness of the malady, its freedom from complications and low mortality, mark it, in these respects at any rate, as totally different from the formidable disease small-pox, which one had seen to decimate the unvaccinated, as occurred in Cape Town in 1881, when the Malays for religious scruples refused to be vaccinated. In July, 1911, Dr. Emilio Ribas of Brazil read a paper in London entitled, "Alastrim, amaas, or milk-pox" before the Society of Tropical Medicine and Hygiene. He observed it at Sao Paulo in agricultural labourers from Bahia, which is in direct trade communication with Africa, and concluded that alastrim was a disease *sui generis* and not modified small-pox.—I am, etc.,

Cape Town, June 16th. W. E. DE KORTÉ.

MEASURES AGAINST TUBERCULOSIS.

SIR,—As one who had the privilege of listening to Professor Calmette's tuberculosis lecture at Edinburgh on June 7th (fully reported in your columns of June 24th, p. 997) may I be allowed to add a word of appreciation and comment? The address may well become historical, and will perhaps be looked on in after-times as having given the official *coup de grâce* to the idea that tuberculosis is in itself a bad thing and that we are to be saved from it. On the contrary, Professor Calmette wants us all to have it, and from an early age, only in not too big or too strong doses, so that we may become accustomed to it gradually. He proposes that in future we should have our tuberculosis administered to us either through the mouth or by inoculation.

It is to be observed that the whole thesis of the eminent French bacteriologist indicated a sane tendency to return to the methods of Nature. Of the large audience of robust savants who followed his lecture it is safe to say that the majority must have had direct personal experience of the tubercle bacillus at some period of their lives, and each and all had obviously come satisfactorily through the ordeal. This immunity, be it noted, these persons had attained naturally—that is, if one may so say, subconsciously, without having attacked the problem directly.

Thus Professor Calmette's demand is that medical science in future should do—exactly what Nature is now doing; only that we should, if possible, control the tendency which Nature occasionally shows towards somewhat slapdash methods.

It is probable that our present large incidence of genuinely pathological tuberculosis is due much more to defective resisting power than either to too strong or too frequent doses of the "poison." Should not the main purpose of public health now be to raise our resisting powers? It is the response of the human organism rather than the circumstances to which it is subjected which seems to be the main element in our modern hygienic problem.

The further questions that now press for solution are, How far is the resisting power by virtue of which the individual satisfactorily tackles his tuberculosis problem a *specific* resisting power? Further, how far are mere laboratory methods in a position to deal with such a problem? I fancy we tend too much in this connexion to overlook the more empirical methods of acquiring pathological knowledge (less intensive but covering a wider field) which are used daily by the general practitioner.—I am, etc.,

Edinburgh, June 24th. A. J. BROCK.

DENTISTRY IN INDIA.

SIR,—Though there are three hundred and twenty millions of people in India, and though the provision of medical and surgical aid is a matter for which the State makes itself in some degree responsible, there is not in the whole of the British Indian Empire a single institution for the teaching of dentistry. There are in the larger towns a certain number of qualified practitioners, mostly European or Parsi. But the mass of the people if they desire anything more than an extraction have to rely upon the services of men who have served as clerks or mechanics to regular dentists, or maybe have picked up a few dental hints at random, and combine dentistry with a trade, such as watchmaking. For the

average Indian villager it is easier to get his leg amputated or a stone removed than to get a tooth filled.

I am aware that it is generally said that Indians have good teeth. Theirs are probably better than ours, but they could be a great deal better than they are without rendering dental aid superfluous. I have served twenty-five years in India and have looked, and I know.

The political situation has so dominated all considerations in India for many years that defects of the kind I have referred to have received no attention. There is room in India for at least five thousand practitioners of a rank corresponding to that of sub-assistant-surgeon. A dental training institution for each province is greatly to be desired, but a start might be made with one for all India. If Government will not undertake the work the object is one which is not unworthy of private beneficence. Why delay further?—I am, etc.,

June 27th. AN INDIAN CIVILIAN.

TOBACCO SMOKE AND CANCER.

SIR,—In the article on the "Etiology of Cancer" (JOURNAL, June 17th, p. 964) it is said:

"The comparison of cancer mortality rates upon smokers and non-smokers is also not demonstrative, because the habit of smoking is not distributed at random; . . . the minority of a population in respect of any widespread social custom are likely to differ from the majority in more ways than one."

I shall be glad if the writer of this article will kindly examine for himself the parts of my annual reports on the health of Woolwich in which I have endeavoured to show that cancer of the mouth and throat (not cancer as a whole) is closely connected with smoking. The argument depends on the following contentions:

1. Chronic irritation is an admitted cause of cancer.
2. Smoking causes a chronic irritation of the mouth and throat, by friction, hot air, nicotine, etc. The hot air is probably the chief factor.
3. Whereas 75 per cent. of persons dying of cancer of the mouth and throat were found to have been excessive smokers, only 16 per cent. of persons dying at advanced ages from other causes were large smokers. Persons dying of cancer of other parts only had 22 per cent. of excessive smokers.
4. Women rarely have cancer of the mouth and throat, and few women over 40 smoke.
5. The deaths from cancer of the mouth and throat have increased *pari passu* with the increased consumption of tobacco in the last twenty years.

It is not a question of smokers and a minority of non-smokers; it is a comparison between slight and profuse smokers. It is not a question of cancer as a whole, but of cancer of the particular part which smoking irritates.

I must allow that the number of the deaths investigated was not large, and I must admit the difficulty of getting accurate information; but I submit that my figures are sufficient to encourage further inquiry in the same direction, and that if such inquiry confirms the contention that there is a close correlation between smoking and cancer of the mouth and throat such correlation can hardly be brushed aside as of no importance.—I am, etc.,

Buckhurst Hill, June 21st. SIDNEY DAVIES.

*** Dr. Davies seems to mistake our meaning strangely. Why he should suppose that the passage quoted from our article supports the contention that a close correlation between smoking and cancer of the mouth if discovered can "be brushed aside as of no importance" we do not know. Our intention was to emphasize the fact that before we can tell what such a correlation means, before we can be sure that there is (in popular language) causation, not correlation, such statistics need a prolonged scrutiny, a scrutiny which is rarely rewarding unless the data are numerous and homogeneous.

THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

SIR,—Dr. P. D. Strachan, in the BRITISH MEDICAL JOURNAL of July 1st wrote:

"In his article of April 15th Sir James Mackenzie perpetuates an error in dynamic terminology which has been universal among English writers . . ., and among teachers, ever since my student days. I refer to his use of the terms 'reserve force' and 'rest force,' where 'power,' not 'force,' is what is meant."

In a letter published in the BRITISH MEDICAL JOURNAL of April 22nd, 1911, under the heading "Heart Failure," I made a like comment on a lecture delivered by Dr. Mackenzie before the Royal College of Physicians. I there said:

"The two new terms 'rest force' and 'work force' are both unfortunate. Dr. Mackenzie says, 'The rest force is the minimal force which the heart can exert to maintain the circulation at a level consistent with life.' Why call a force which the heart exerts a 'rest force'? A force in action may be small, but it is not a '*rest* force.' Moreover, 'rest force' and 'work force' are mutually confusing, since they are both working forces. . . . And why use the term 'force' where force is not meant? It is not 'the minimal force which the heart can exert,' but the minimal *energy* which the heart can expend 'to maintain the circulation at a level consistent with life,' with which Dr. Mackenzie is dealing. Better terms therefore would, I think, be 'minimal (or normal or standard) energy' and 'reserve energy.'"

Dr. Strachan's letter shows that my protest of eleven years ago has availed little. I hope his may have better success.—I am, etc.,

Clyst St. George, Devon, July 1st. D. W. SAMWAYS.

THE RECOGNITION OF AORTIC INCOMPETENCE.

SIR,—I have followed with great interest the discussion on the above subject which was initiated by Dr. Brockbank's paper. I must acknowledge to being a little surprised that practically no reference was made to blood pressure measurements, which make a Corrigan's pulse a measurable phenomenon: the difference between the crest of the wave and its lowest point corresponds to a measurable number of millimetres of mercury, which surely bears a direct relation to the amount of regurgitation.

What leads me to write, however, is Professor Rudolf's letter (March 18th) explaining his hypothesis that "in certain weakened states the pulmonary muscular ring is occasionally . . . relaxed . . . and . . . permits of leakage there." I wish to suggest that something similar happens sometimes in ankylostomiasis, but at the aortic valve.

Dr. Lyell and I have at present under our care a Chinaman, aged 27, admitted with the regular signs and symptoms of ankylostomiasis, including an advanced degree of anaemia. On April 10th, forty-eight hours after admission and before anthelmintic treatment had been administered, his systolic pressure was 140 mm. and his diastolic only 40 mm. The apex was beyond the nipple line, and in the sixth space.

After one treatment he returned home, but came back to hospital on April 30th; on May 1st his blood pressure was found to be systolic 110, diastolic 58, and the apex was in the nipple line.

At no time has any diastolic murmur been made out in this particular patient—even with a wooden stethoscope—no matter whether he was lying or standing. In other patients diagnosed as suffering from aortic incompetence, on admission such a murmur was heard, but after the blood condition had improved the murmur was lost and the "Corrigan" character of the pulse had disappeared, the systolic pressure having dropped 15 to 25 mm. and the diastolic having increased. In two such cases the Wassermann test was found to be negative.

I can conceive of no better explanation of these facts than that the aortic muscular ring was so relaxed as to permit of leakage.

Of course we also get cases of organic aortic incompetence, with positive Wassermann reaction, but they do not differ from similar cases seen in England.—I am, etc.,

Swatow, China, May 9th. G. DUNCAN WHYTE.

THE DIPLOMA IN PUBLIC HEALTH.

SIR,—I have been expecting every week that some D.P.H. better known and qualified to speak than myself would have publicly protested against the recent decision of the General Medical Council regarding the public health diploma, but as there is no indication that the profession seems to interest itself in the subject I crave your indulgence for a short criticism of the situation created by the Council.

It is quite true that the student of the present day has more than enough study imposed on him without increasing his burden, but the necessity for an extended knowledge of hygiene is becoming more apparent every day, and the ignorance of the newly qualified practitioner on the subject is, to say the least of it, disappointing. Why should the General Medical Council discourage the general practitioner from making himself conversant with the rules of public health and helping himself to understand the responsibility about which his duties often call upon him to express an opinion? A distinguished member of the Council declared that the

ordinary practitioner has no need for ornamental qualifications; such cheap sarcasm is unworthy of a gentleman holding such a distinguished position.

To abolish the D.P.H. for general practitioners I consider to be a most retrograde step. Reform is probably necessary; increasing the standard for those who wish to devote themselves to special work, but leaving the general practitioner a chance of expressing a qualified opinion in health matters.

Few young medical men know anything about school, institutional, or dairy hygiene; comparatively few can express an opinion on private water supplies, make a rough analysis of milk, or prepare a diet sheet for an orphan school; and yet these are questions that general practitioners are often consulted about. Again there are not many doctors outside the despised list of D.P.Hs. who can lay their hands on Acts of Parliament respecting health legislation, who can tell if drain pipes are correctly laid, or gauge the full significance of vital statistics. It may of course be contended that these subjects can be studied privately, but if there is not a definite object in view, it is not likely that a man already overworked will sit down to grind at new subjects.

Apart from its utility, the syllabus for the D.P.H. is most fascinating, and a candidate cannot help being interested and surprised at the possibilities it opens out to him. I quite agree that the diploma should not be taken within two years of registration. If the D.P.H. is too elementary for those who intend devoting themselves exclusively to this work a higher degree similar to a fellowship could be instituted which all medical officers of health in towns of over 50,000 should be required to possess. I would also urge that one of the essentials for this higher degree would be that the candidates should produce evidence that they had been engaged for at least two years in general practice.—I am, etc.,

Catford Hill, S.E., July 2nd. T. E. WHITE.

THE PLIGHT OF THE RUSSIAN PROFESSION.

SIR,—In answer to the appeal on behalf of the Russian medical profession, I have great pleasure in enclosing a donation. As one having worked for several months with Russian medical men in South Russia during 1919, I can testify to the awful conditions that must have overtaken them. Even in 1919 many thousands of doctors were without necessary clothing, and their families in dire distress. Out of the black cloud of revolution one bright star has always shone—namely, the work of the Russian medical and nursing professions. It is not necessary to bring further proof of the sad plight the medical men are in at present in Russia. However, one statement I can make which will afford further proof of the good work done by Russian doctors: when compiling statistics we found that from December, 1918, to August, 1919, the death rate from typhus fever was as follows:

Medical men	40 to 50 per cent.
Nursing sisters	30 per cent.
Patients	8 to 10 per cent.

Surely these figures tell the whole tale of heroic work carried out by the medical and nursing professions in Russia. What of the families of those left from the married doctors included in the 40 to 50 per cent.?

In conclusion, I can testify to the sterling good-heartedness and unfailing cheerfulness of these Russian medical men, and have personally received many kindnesses from their hands.—I am, etc.,

July 1st. G. K.

SERUM BY THE MOUTH.

SIR,—The practical advantages of the oral administration of vaccines and serums are of sufficient importance to justify the hope that the question raised by Dr. Allison in the JOURNAL of July 1st (p. 29) and by the review of *Hormone Therapy* (June 17th, p. 955) will receive further attention at the hands of those who have the opportunity of comparing the oral with the hypodermic method.

At times of epidemics, in the case of children, and in the Services the oral administration of prophylactic vaccines would save much time and trouble, and moreover it is perhaps not sufficiently recognized that many people are deterred from having vaccines by a dislike of the operation of hypodermic injection, simple and safe though it is.

Provided vaccines are not vitiated by the gastric juices there seems no reason why the absorption from the stomach should not be as effective as from under the skin, especially if some simple routine is adopted such as giving the dose on an empty stomach accompanied by a gastric stimulant.

This letter is written in the hope that more will shortly be heard of this subject with regard to effectiveness and dosages.—I am, etc.,

July 2nd. R. N.

CAESAREAN SECTION.

SIR,—My attention has been drawn to an article in the BRITISH MEDICAL JOURNAL, June 10th, 1922 (p. 911), on Caesarean section by Mr. S. J. Cameron of this city.

I congratulate him on having 79 consecutive sections, with one fatality, in his recent cases. He then proceeds to mention that in his later cases he has changed his abdominal incision to one through the right rectus, that he turns the uterus inside out to remove placenta and membranes, and that the patients are nursed in the Fowler position.

It is a well-known fact in Glasgow that some years ago I introduced these improvements in this operation at the Royal Maternity Hospital, Glasgow. I enclose a reprint from the *Glasgow Medical Journal* of my communication to the Royal Medico-Chirurgical Society of Glasgow, April, 1921, when these improvements were fully discussed, Mr. Cameron being present. An abstract of same appeared in the BRITISH MEDICAL JOURNAL, April 30th, 1921 (p. 641).—I am, etc.,

Glasgow, July 1st. JAMES H. MARTIN, M.D.

Obituary.

FRANCIS W. BAILEY, D.S.O., M.R.C.S., L.R.C.P.,

Anaesthetist, Liverpool Royal Infirmary; Lecturer on Anaesthetics, University of Liverpool.

WE regret to record the death of Dr. Francis W. Bailey, in his 50th year, after a long and lingering illness, borne with great fortitude. The elder son of the late Dr. Bailey, an esteemed practitioner in Liverpool, Francis W. Bailey was educated at the Liverpool College, studied medicine at University College, Liverpool, and qualified in 1894. After holding residential posts at the Royal Infirmary in the special departments, he devoted his life work to anaesthesia. In this subject he soon became a leading authority, and he contributed papers of practical value on the administration of anaesthetics by various methods to the BRITISH MEDICAL JOURNAL and the *Liverpool Medico-Chirurgical Journal*. At the outbreak of the great war he served first as an officer with the 3rd West Lancashire R.F.A. on the western front. For his gallant conduct he was awarded the D.S.O., and in subsequent battles he was twice mentioned in dispatches. He was wounded in the first series of battles of the Somme, and there is no doubt that the fatigue and hardship of the war left his constitution impaired. Previous to the war, in 1910, Dr. Bailey was elected, in the Conservative interest, a city councillor, and, with the exception of a year, held that position up to his death. He was a public-spirited man, and devoted much careful thought in the execution of his duties in the City Council.

Dr. Francis W. Bailey was a man of versatile interests. He was a member of the Historic Society of Lancashire and Cheshire. He took a keen pleasure in archaeology and was well acquainted with the history of his native city and the landmarks of antiquity in the two counties. He was an ardent cyclist, and there were few counties which he, in company with his brother, had not visited awheel, always devoting their attention to the historical features of the villages and towns they traversed.

His funeral was a military and civic one. As lieutenant-colonel, the rank he held up to the time of his death, full military honours were accorded. The Lord Mayor and other members of the City Council were present to pay their respect to one who had so assiduously fulfilled his civic duties. A great number of medical men, friends, and colleagues attended the service, which was conducted by the Rev. J. R. Beresford, who was with Colonel Bailey on the western front. The chaplain's short address set forth in simple language the high qualities Dr. Francis W. Bailey displayed on the field as a gallant soldier and a devoted medical man. At the graveside the Last Post was sounded, and a little farther away the sounds of the réveillé closed the impressive ceremony. He was a bachelor, and leaves behind a devoted sister and a brother, Dr. Reginald T. Bailey, to cherish the memory of a man who did his life work well and earned the affectionate regard of all who knew him. In demeanour quiet and by nature thoughtful, he seemed to be

a man who succeeded in making life worth while. His long illness drew forth much sympathy from his many friends, and to the last he interested himself in his kindly way in their doings.

J. C. OGILVIE WILL, M.D.,

Consulting Surgeon, Royal Infirmary, Aberdeen.

DR. J. C. OGILVIE WILL, one of the oldest and best known medical practitioners in Aberdeen, died, after a brief illness in a nursing home, on June 29th. Dr. Will, who was in his 78th year, was a son of the late Dr. James Will of Woodside, and was educated at the Aberdeen Grammar School and the University, taking the degrees of M.B. and C.M. in 1866, and proceeding M.D. in 1868. After graduation he went to Edinburgh, where he acted for some years as assistant to the late Sir James Simpson, and returned to Aberdeen to act as assistant to Professor Pirrie in his private practice. Later he became Assistant Professor and Examiner in Surgery at Aberdeen University. At a comparatively early age he was appointed surgeon to the Royal Infirmary, and held this post for eighteen years, when he was appointed consulting surgeon, having resigned on account of the growth of his private practice. Dr. Will held several public appointments: medical referee under the Workmen's Compensation Acts, consulting surgeon to the Great North of Scotland Railway, surgeon to H.M. Prison, Aberdeen. While attached to the Royal Infirmary Dr. Will was well known for the thoroughness of his clinical methods. He contributed numerous and valuable papers on various subjects, especially those connected with genito urinary surgery. Dr. Will had an extensive panel practice and was particularly well liked by all his patients; he had a bright and cheerful disposition. He was a most lovable and benevolent personality, very strong in holding his conclusions, at the same time always courteous and kindly to those who differed from him. A Justice of the Peace, he was also a Commissioner of Supply for Aberdeenshire. He is survived by Mrs. Will, two daughters, and one son, to whom the warmest sympathy is extended. Dr. Will was for many years a member of the British Medical Association.

PROFESSOR QUINCKE, who introduced lumbar puncture into clinical medicine and gave his name to a form of oedema, has recently died at Frankfort, at the age of 80.

PROFESSOR WILHELM VON TEUBE, well known for his work on the pathology of the digestive system and physiological albuminuria, has recently died at Stuttgart, at the age of 80.

The Services.

TERRITORIAL DECORATION.

THE King has conferred the Territorial Decoration upon the following officers of the Royal Army Medical Corps, Territorial Army, under the terms of the Royal Warrant, October 13th, 1920: Lieut.-Colonels A. L. Jones (ret.), H. Collinson, C.B., C.M.G., D.S.O., and T. Fraser, C.B.E., D.S.O. (ret.); Majors A. A. Martin (2nd Home Counties Field Ambulance), S. E. Rigg (ret.), W. B. Milbanke (ret.), and A. B. Whitton (ret.); Captains R. C. Clarke, O.B.E. (attached 4th Battalion, Gloucester Regiment), and T. J. Faulder (ret.).

DEATHS IN THE SERVICES.

CAPTAIN THOMAS STOKOE ELLIOT, M.C., R.A.M.C.(T.F.), died at Salisbury, Southern Rhodesia, on April 17th, aged 49. He was the son of the late George Stokoe Elliot, M.D., F.R.C.S.E., of Southwell, Notts, and took the L.S.A. in 1899, the M.R.C.S. and L.R.C.P.Lond. in 1905, the D.P.H. of the London colleges in 1904, and the D.P.H.Cambridge in 1905. Before the war he was in practice at Southwell. He took a commission as lieutenant R.A.M.C.(T.F.) in the North Midland (Derby) Field Ambulance on October 28th, 1914, was promoted to captain after six months' service, and to acting major on April 1st, 1918. He received the Military Cross on September 16th, 1918. On October 5th, 1920, he was appointed D.A.D.M.S. of the 46th North Midland division of the Territorial Forces at Derby.

Lieut.-Colonel William Winslow Tomlinson, R.A.M.C. (retired), died at Fern Hollow, Stoke Bishop, on May 28th. He was born on December 17th, 1840, educated at Trinity College, Dublin, where he was demonstrator of anatomy, and in the school of the Royal College of Surgeons, Ireland; he took the L.R.C.S.I. in 1862, and the L.K.Q.C.P. in 1864. Entering the army as assistant surgeon in September, 1864, he served in the old regimental days in the 2nd Foot, the Queen's Own West Surrey Regiment, became brigade surgeon in 1889, and retired in October, 1894. He served in the Egyptian war of 1882, was present at the battle of Tel-el-Kebir, and received the medal and the Khedive's bronze star.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT the Encaenia held on June 28th in the Sheldonian Theatre among the distinguished persons who received honorary degrees was Dr. F. Gowland Hopkins, Professor of Biochemistry at Cambridge, who received the D.Sc. In presenting him for this degree the Public Orator, Dr. A. D. Godley, spoke in Latin of Professor Hopkins's abstruse researches into the nature of the constituents of living bodies and of the foods that sustain them, adding that these investigations were not only of the highest scientific value, but had practical applications for the study of disease. After the ceremony the new doctors were entertained to luncheon by the Warden and Fellows of All Souls, and this was followed by a garden party in the grounds of Worcester College.

Appointment of Dean.—Owing to the increasing complexity of medical studies at Oxford, where medical students take an Honours Degree in Natural Science (usually in Physiology), in addition to the medical curriculum, the University has recently thought it desirable to assist the organization and co-ordination of the activities of the School by authorizing the appointment of a Dean. The Board of the Faculty of Medicine has accordingly appointed E. W. Ainley Walker, D.Sc., D.M., Fellow and Tutor of University College, Lecturer in Pathology in the University, to the newly instituted office of Dean of the School of Medicine.

Radcliffe Scholarship in Pharmacology.—The recently instituted Scholarship in Pharmacology, of the value of £50 for one year, has been awarded by the Master and Fellows of University College, upon the report and recommendation of the Professor of Pharmacology (Dr. J. A. Gunn), to Albert Arthur Fitzgerald Peel, B.A., University College: *proxime accessit*, (honorary scholar) Allan Warren Linford Row, B.A., Brasenose College (Senior Hulme Scholar).

UNIVERSITY OF CAMBRIDGE.

THE following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part II (Radiology and Electrology)*: R. W. Chalmers, A. Flett, J. A. Geraghty, B. Grellier, S. M. Hepworth, A. Lambadarides, J. A. Thomson, O. R. Unger.

UNIVERSITY OF LONDON.

Semon Lecture, 1922.

THE Semon Lecture on "The development of transatlantic rhinolaryngology" will be given in the Lecture Hall of the Royal Society of Medicine, 1, Wimpole Street, W.1, by Professor H. S. Birkett, C.B., M.D., Dean of the Faculty of Medicine, McGill University, Montreal, at 5 p.m. on Wednesday, July 12th. The chair will be taken by the Vice-Chancellor of the University, Mr. H. J. Waring, M.S., F.R.C.S. Admission is free, without ticket.

UNIVERSITY OF DURHAM.

AT the convocation held on June 27th the following degrees and diplomas were conferred:

Hon. D.C.L.—Professor Charles J. Martin, C.M.G., M.D., F.R.S., Director of the Lister Institute of Preventive Medicine, London.
M.D.—S. R. Chatterji (*in absentia*), G. A. Clark, W. D. Forrest, J. R. Hughes, H. A. Lake, I. M. Pirrie, R. Welch, S. K. Young.
M.D. (*for practitioners of fifteen years' standing*).—R. D. Attwood, A. Brownlee, J. L. Prichard, C. B. Rossiter.
M.S.—J. Gilmour, A. B. Jones, G. E. Lloyd.
M.B., B.S.—Florence Bentham, R. A. Brown, R. H. Burnett, R. N. Craig, H. B. L. Dixon, Anne Fairweather, Gladys H. Fletcher, Elizabeth Killian, Mona Kirkhouse, T. Kirsopp, G. McCoull, Ettie O. McCullagh, Mary J. McManus, Mary Manners, H. L. Mather, A. J. Moskow, Una M. Mulvany, P. Murphy, P. J. O'Connell, L. N. K. O'Neill, F. W. M. Pratt, J. V. Reuben, Jessie E. Sheret, G. W. Spark, N. H. Watson, J. Whillis, C. A. Wilson, G. Wilson, H. A. Wilson, Eleanor H. Wylam, Ella L. Young.
B.Hy.—G. Hurrell, Alice M. Stenhouse.
D.P.H.—G. Hurrell, Alice M. Stenhouse.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S. (*Materia Medica, Pharmacology, and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology*).—T. R. Aynsley, Kathleen A. M. Ayton, Elizabeth Bainbridge, Dorothy I. Brown, J. R. Campbell, J. Carse, O. P. Chapman, T. L. J. Coxon, Ethel W. Daniels, T. Fraser, G. A. Gilmour, A. Hanson, J. B. Hartley, Frances R. Henegan, G. C. Henry, J. A. Hislop, Madge Hopper, *R. Keenlyside, Nora W. Kirk, J. W. C. Leech, F. J. Lorriman, F. W. Marshall, T. H. Meek, A. G. Ogilvie, Elsie L. Peet, G. Punshon, Margaret Tanken, J. Reay, F. P. Rust, M. Ryle, *J. H. Saint, J. A. Stobbs, T. E. Stoker, R. L. Stubbs, A. Swindale, G. G. C. Taylor, E. F. D. Walker, H. A. Wallace.
* Second-class honours.

UNIVERSITY OF MANCHESTER.

DR. JOHN SHAW DUNN has been appointed to the Proctor Chair of Pathology and Pathological Anatomy in succession to Professor H. R. Dean, whose resignation was recently announced. Dr. Shaw Dunn, after holding the post of Clinical Lecturer in Pathology in the University of Glasgow and Director of the Clinical Laboratories, Glasgow Western Infirmary, was appointed Professor of Pathology in the University of Birmingham, which post he now holds. During the war he was a brevet major in the R.A.M.C.

UNIVERSITY OF LEEDS.

A CONGREGATION of the University was held in the Town Hall, Leeds, on July 1st, when the following were among the degrees conferred by the Vice-Chancellor:

M.D.—G. Colin H. Nicol.

FINAL M.B., CH.B.—*H. P. Fowler, *Mary Hellier, *R. E. Jowett, *J. A. Trewick, Frances M. Bebb, H. Brostoff, T. S. Davy, G. Denton, S. Erdheim, M. Gordon, Doris M. Langley, H. E. Lapidus, S. Levy, Kathleen M. Peacock, H. Sugare, Margarite Ward, Bertha Wheatley, P. E. Woodroofe.

* With second-class honours.

The following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—*Part II:* E. Baron, Frances M. Bebb, J. Bernstein, F. Clegg, R. E. Crockatt, Dorothy M. Edgecombe, S. Erdheim, H. P. Fowler, A. Goodman, Christine M. B. Hare, Mary Hellier, R. E. Jowett, Doris M. Langley, H. E. Lapidus, E. Linfoot, P. Oberman, J. R. Oddie, J. E. Outhwaite, M. Sourasky, D. M. Sutherland, J. A. Trewick, G. M. Wadsworth, G. F. Walker. *Part I:* R. Chester, Florence Cusworth, E. L. H. Jones, F. Lipman, R. Marinkovitch, H. M. Petty, J. W. Pickard, B. Stross, H. Taylor, W. Thistlethwaite, S. Thompson, D. Yates.

D.P.H.—H. Sinson, Marjorie Harris.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—C. W. Ewing, F. A. Kerr, G. C. F. Roe.

Medical News.

DR. ALEXANDER MILLS KENNEDY, who was appointed Professor of Medicine in the Welsh National Medical School last October, has been elected dean of the school, in succession to Professor David Hepburn, C.M.G., who has held the office of dean of the Medical School at Cardiff for a number of years.

DR. DAVID FYFE, of the Middle Temple, was called to the Bar on June 28th.

THE Academy of Sciences of Madrid has presented the triennial prize, founded in 1905 in memory of Echegaray, to Dr. Ramón y Cajal, who has lately retired from his chair in the Medical Faculty of the University of Madrid.

DR. T. CASPAR GILCHRIST, of Baltimore, will deliver the annual oration, on the progress of dermatology, before the London Dermatological Society, at St. John's Hospital, Leicester Square, W.C., on Thursday, July 13th, at 7 p.m.

A PARTY of final-year students from Bristol University recently paid a visit to Bath under the direction of Dr. J. Odery Symes. After a short lecture on the physiological effects of the baths and waters, the party was taken round the bathing establishment, where demonstrations were given.

PLANS for amalgamating all institutions for higher education in the maritime provinces of Canada into a central university at Halifax, Nova Scotia, with the assistance of the Carnegie Foundation for Research, have been announced, and representatives of the different colleges are at present considering the proposal.

THE Greek plays which used to be given by the boys in the open-air theatre, Bradfield College, were interrupted by the war; they have been resumed this summer, the play selected being the *Antigone* of Sophocles. The performance, which was most impressive, has been witnessed on four occasions by large audiences.

THE Queen, from whom the Convalescent Auxiliary Hospital at Roehampton takes its name, has been graciously pleased to accept a copy of the book on *Artificial Limbs and Amputation Stumps* by Mr. Muirhead Little, surgeon to the hospital. The Queen of Italy, who likewise takes a great interest in the subject, has also accepted a copy.

A BILL has passed the New Jersey (U.S.A.) Legislature requiring applicants for marriage licences to submit to a medical examination.

A CHAIR of therapeutical hydrology and climatology has been created at the Bordeaux Faculty of Medicine, with Dr. Sellier as its first occupant.

THE Governors of the Manchester Children's Hospital, Pendlebury, have decided to establish a special orthopaedic department, and have appointed Mr. Robert Ollerenshaw, F.R.C.S., to be orthopaedic surgeon to the hospital. Outpatients will be seen at Gartside Street on Friday mornings, and twelve beds will be reserved at Pendlebury for cases needing operative treatment.

THE War Office Committee on Shell Shock, which has been engaged in its inquiry for more than two years under the chairmanship of Lord Southborough, has completed its report; and the hope is that this will be presented to Parliament within a fortnight at latest. The report is voluminous (nearly two hundred pages), and the recommendations are unanimous.

THE thirty-third Congress of the Royal Sanitary Institute, which is to be held at Bournemouth, will be opened by the President, the Right Hon. J. E. B. Seely, M.P., on the afternoon of Monday, July 24th. Some 500 delegates appointed by public health bodies in this country and in the Dominions, and by certain foreign governments, are expected to attend. The work of the Congress will be conducted in sections and by conferences. Full particulars can be obtained from the Secretary of the Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W.1.

DR. J. GARDNER, on the occasion of his leaving Mexborough, has been presented by his friends and patients with a gold watch suitably inscribed, and Mrs. Gardner with a gold wristlet watch.

A COURSE of lectures with instruction on orthopaedics will be given at the Institut Calot, Berck-Plage, Pas-de-Calais, France, from August 7th to August 13th. Particulars can be obtained from Dr. Fouchet at the institute.

PRACTICAL courses in dermatology and the treatment of venereal disease will be given next autumn in connexion with the clinic of the Hôpital Saint-Louis, Paris, under the general direction of Professor Jeanselme. The course in dermatology will begin on October 2nd, and that on venereal disease on November 13th.

DURING the fifth International Neo-Malthusian and Birth Control Conference a session to discuss contraceptive technique, open to the medical profession only, will be held in the Kingsway Hall on Friday, July 14th, from 2.30 to 5 p.m., and on the same morning there will be a discussion on the general medical aspects of birth control. Medical practitioners wishing to become honorary members of the conference should communicate with the medical secretary, Dr. B. Dunlop, 71, Harley Street, W.1. We are informed also that a conference on birth control, called by the Mayor, will be held in the Council Chamber of the Deptford Town Hall on Monday, July 10th, at 8.30 p.m. The M.O.H. for the borough (Dr. C. S. Thomson) will open the discussion.

THE annual meeting of the Poor Law Medical Officers' Association will be held on Thursday, July 13th, at 3.30 p.m., at the offices of the British Medical Association, 429, Strand, W.C. 2. The newly elected President, Sir Arthur Newsholme, will deliver an address. The council's report, to be presented at the meeting, states that much work on behalf of district medical officers throughout the country has been done during the year and many inquiries dealt with. The council throughout this period has held its meetings on the premises of the British Medical Association, and notes that this has coincided with larger and more profitable attendances. During the absence abroad, for reasons of health, of the honorary secretary, Dr. Withers Green, Dr. John Alcindor has undertaken his work.

THE Royal Society of Medicine recently instituted a new order of Associates open to qualified men and women (whether British or otherwise) who within five years of their first professional qualification apply to the Council of the Society for election. Associates are entitled to attend the ordinary meetings and take part in a discussion in any Section. They have the use of the reading, writing and smoking, conference, and dressing rooms, of microscopes and other facilities for the examination of specimens; they may also be granted the use of the Marcus Beck Laboratory. In addition they have all the advantages of the library, except that they may not borrow more than one volume at a time. Associates pay an annual subscription of three guineas, which becomes due on October 1st of each year, but no admission fee. Associateship terminates on the expiration of five years from the date of the associate's first professional qualification, but an associate then elected to the Fellowship is not required to pay an admission fee as such.

AT the Lincolnshire Assizes on June 29th, before Mr. Justice Branson, Dr. Sydney Firth, of Grantham, was charged on four counts with "using a certain instrument with intent to procure the miscarriage of a certain female." The prisoner pleaded not guilty. The prosecution was opened by Mr. Hugo Young, K.C., who said that in four separate cases Dr. Firth saw women who were pregnant, and at their request performed illegal and felonious operations on them with a view to procuring miscarriage. Evidence was taken from women with whom the prisoner had lodged or held rooms for the purposes of his practice, and from the four women who were alleged to have been operated upon. The latter corroborated counsel's statement as to the payment by them of sums of money. Other witnesses having been called for the prosecution, Mr. A. M. Lyons addressed the jury on behalf of Dr. Firth, and criticized the evidence. The jury found the prisoner guilty on all four counts, and he was sentenced to seven years' penal servitude.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"M. S." inquires whether the emoluments received by medical officers of asylums are assessable for income tax.

*** The answer is yes, except such emoluments as are receivable in kind, and consequently being inconvertible into money, do not fall within the principle laid down in "Tennant *v.* Smith."

"W. W." has been refused a deduction of 5 per cent. on gross bookings for bad debts.

*** An allowance can be claimed for bad debts estimated to be irrecoverable, but for that allowance it is probably necessary to estimate each debt separately. "W. W." may perhaps know that most practitioners base their returns on gross cash receipts, thus avoiding the necessity of dealing with bad debts which can seldom be even approximately estimated.

"J. A. A. R." inquires whether it is necessary to stamp an envelope directed to the income-tax collector or inspector.

*** We understand that where a stamp is not affixed the Post Office collects double the amount of the stamp charge on delivery of the letter, notwithstanding that it is marked "O.H.M.S." and contains nothing but official matters.

SKIN DISEASE POSSIBLY DUE TO ENDOCRINE DEFECT.

A CORRESPONDENT writing from Ireland requests suggestions for treatment in the case of a boy, aged 15 years, who has never previously suffered from any serious illness, but during the last two years has noticed small pustular spots on both ears. He has been treated with tonics containing, among other things, arsenic, and also with local applications, but without effect. During the last twelve months the nails of his fingers and both large toes have become brittle and cracked, with occasional suppuration round the matrices. Our correspondent inquires whether this may be a case of calcium deficiency or whether parathyroid is indicated.

*** A dermatologist to whom we have referred this problem thinks the condition probably due to deficiency of some internal secretion, and suggests a trial of one of the preparations made from the endocrine glands—for example, hormotone or polyglandin. He states that he has been disappointed with the results obtained from the exhibition of parathyroid.

VISION TESTS FOR THE MERCANTILE MARINE.

"A. K."—The vision tests for candidates for the mercantile marine are detailed in the pamphlet issued by the Board of Trade (Regulations relating to the Examination of Masters and Mates in the Mercantile Marine. London: His Majesty's Stationery Office, or any bookseller. 1921. Price 1s. net). It is described as a reprint, with alterations, of the 1918 edition. A general statement of the visual requirements is given on pp. 14–16, detailed information on the manner of taking the tests on pp. 76 and 77. For form vision the apparatus used is based on Snellen's test types, sheets of letters of graded sizes. Paragraph 6 gives the requirements thus: Standing at exactly 16 feet from the test type, which is exposed in an appropriate manner and illumination, the candidate is required "to read correctly at least nine letters in the sixth line and eight letters in the seventh line of a sheet. If the candidate does this he may be considered to have normal vision and passed. The candidate may use either or both eyes at his option. Inquiry shows that the sixth line of this test card is equal to 5/6.7, and the seventh line to 5/5 of Snellen's test types for use at 5 metres. Such test types are printed and can be obtained at several opticians'. The method of testing the colour vision is also given in detail; the whole of the test is made with a lantern by which coloured lights may be exposed, to be named by the candidate. If he mistakes red for green or green or red, he fails. If he mistakes a white light for red, but after correction makes no further similar mistake, he is passed. If he repeatedly calls red white, or white red, he is referred for further examination.

LETTERS, NOTES, ETC.

IS MUMPS PAROTITIS?

DR. G. WASHINGTON ISAAC (London, W.C.1) writes: On January 12th I saw a lad suffering from swollen submaxillary glands on both sides but with no visible swelling of the parotid, and no pain or tenderness. His throat appeared to be normal. He had come from a public school where there were many cases of mumps. Before I saw him he had been seen by a consulting physician who gave a tentative diagnosis of mumps. Three weeks later his mother was affected in an exactly similar manner. On April 5th I attended a typical case of mumps, and on April 22nd another in the same family. On May 1st I awoke and found I had a hugely swollen neck due to inflamed submaxillary glands. I also had slight fever, which lasted a few days, but no pain in or tenderness of the parotids. Three weeks later my daughter developed typical parotitis.

MECHANICAL MEASURES IN INTESTINAL STASIS.

MR. CORTLANDT MACMAHON, M.A. (Instructor for Speech Defects and Breathing Exercises at St. Bartholomew's Hospital), writes: By the courtesy of a member I was present when Sir Arbuthnot Lane spoke on May 30th, at the Royal Society of Medicine, on intestinal stasis. Sir Arbuthnot inquired what was suggested outside surgical aid to clear up the condition in severe cases. With the greatest deference I suggest that prophylactic treatment of a mechanical type would often prevent the possibility of the condition arising. I also suggest that many cases of intestinal stasis will yield to the same treatment. The origin of the condition is, I believe, either a constitutional or, more likely, an acquired weakness of the abdominal wall, for which there may be many causes. This soon develops visceroptosis, of which intestinal stasis is a constituent element. Medical treatment gives great relief; massage may relieve temporarily; paraffin and a belt no doubt in some cases do good, but in all these various treatments one great feature is missing, and that is, the accommodation for the displaced organs is not given. In visceroptosis examination will show, in addition to the giving-way of the abdominal wall, a marked falling-in of the lower ribs, which is a natural and inevitable consequence of prolapse of the great organs under the diaphragm; there is, therefore, no longer adequate room for the organs in the abdominal cavity. For recovery this accommodation must be re-established and, by daily exercises carried out quite easily in a recumbent position, the lower ribs are made to expand so that they are almost in a vertical line with the axilla, and in time this condition becomes permanent. When this occurs there is ample room for the organs once more. The abdominal muscles are trained to have an extraordinary power of contraction, so much so that the abdominal wall can be retracted almost to the spinal column. Further exercises, all in a recumbent position, are carried out by the operator with practically no exertion to the patient; the organs are replaced and supported and begin to function normally. After ten to twelve treatments with an operator the patient can carry on perfectly well, and if fifteen minutes a day is given to the exercises no recurrence should take place. Sir Arbuthnot Lane spoke of the terrible depression of these patients, amounting to almost a suicidal tendency. In the treatment set out above an improvement in the mental condition occurs in a few days. I suppose many children with the pot-belly condition are candidates for intestinal stasis, unless the abnormality can be controlled. I write as a layman only—with, however, some considerable experience of the physical treatment of visceroptosis patients sent to me by the kindness of the medical profession.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 30, 31, and 32 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *20*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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Six lines and under	0 9 0
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An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.